

Bob Cooper's

JANUARY 16 2004

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

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"Flips Out"**

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Vol. 10 ♦ No. 113

Price Per Copy:

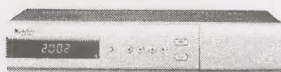
NZ\$10/A\$11/US-Eur\$8





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HUMAX ACE S Receiver
(Irdeto V2.06 CAM embedded)

\$300

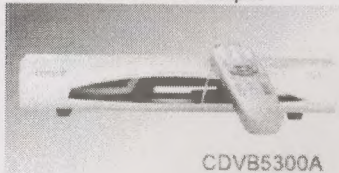
Supernet digital receiver
(Irdeto V2.09 CAM embedded)

\$270

SPACE 5300A CI Receiver
(Two Common Interface Slots)

- Auto PID correction
- C & Ku band input
- PAL/NTSC auto converter
- 5000 channels
- Picture in picture EPG
- DiSEqC1.0/1.2 control
- TV/VCR Scart & RCA output

\$180



CDVB5300A

SPACE 2300 digital receiver

- Auto PID correction
- C & Ku band input
- PAL/NTSC auto converter
- 5000 channels
- Picture in picture EPG
- DiSEqC1.0/1.2 control
- TV/VCR Scart & RCA output

\$140

Phoenix JT3100T Digital Terrestrial Receiver

\$220/each (for one box of 6 unit)

\$200/each (for five boxes of 30 units)

NextWave 3220 FTA digital

receiver (Made in Korea)

- C & Ku band input
- PAL/NTSC auto converter
- 5000 channels Picture in picture EPG
- DiSEqC1.0/1.2 control
- TV/VCR Scart & RCA outputs

\$160

NextWave 3220C digital receiver

(Two common interface slots) (Made in Korea)

- C & Ku band input
- High symbol rate >45,000
- PAL/NTSC auto converter
- 5000 channels Picture in picture EPG
- DiSEqC1.0/1.2 control
- TV/VCR Scart & RCA outputs

\$220

Optus C1 Aurora Kit

Supernet digital receiver

- (Irdeto cam embedded)
- 11.3 GHz/Universal Ku
- LNBF65cm dish, Mount
- bracket, 30m RG6 cable

\$395/set

Aurora card \$95

LBC, ART, Al Jazeera Kit
Supernet digital receiver

- (Irdeto cam embedded)
- C-band LNBF
- 2.1m Mesh dish
- 3' Pole
- 30m RG6 cable

\$495/set

Subscription fee
\$30/month*

Irdeto 2.06B CAM

\$160

65cm offset dish

\$27

11.3 Ku LNBF

\$25

Universal Ku LNBF

\$25

Universal Mount

\$15

RG 6 Dual cable (305m/box)

\$85

Gold Card (10/bag)

\$85

Silver Card (10/bag)

\$135

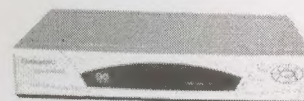
Satellite finder

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Free to air kit

Including dish, LNBF,
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Changhong 1000 Digital Receiver

- Aston 1.05 Cam embedded
- Best Value For Indian & Franch
- (C-band on Asiasat 3s & Ku band on Intelsat 701)
- C & Ku band input, 2000 Channels,

\$200

Full range of C/Ku band satellite dish - panel & mesh, prime & offset, from 45cm to 4.5m

Full range of C/Ku LNBF - Dual output, one cable solution, C/Ku combination

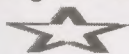
Full range of actuator - From 12" light to 36" heavy duty

DiSEqC 1.2 Positioner & SupperJack EZ2000 Positioner

2.4 GHz AV sender and Remote extender

RG6 Cable and Motor cable

Full range of satellite accessories



THIS MONTH'S SPECIALS



SPACE 2300A FTA Digital Receiver \$1400/(2 box, 5units/box)

Phoenix V-Box \$600/(box of 10units)

18" Phoenix Actuator \$360.00/(3 box, 4 units/box)

Irdeto 2.06B CAM \$1400/(box of 10units)

Phoenix 2.3m Mesh dish \$1650/(pallet of 10 sets)

Zinwell LNBF 15K C-band LNBF \$648/(box of 24)

RG 6 Cable \$700/(10 box, 305m/box)

65cm offset dish \$125/(box of 5sets)

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SatFACTS MONTHLY

ISSN 1174-0779

is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd.

This publication is dedicated to the premise that as we are beginning the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education.

These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home.

Welcome to the 21st century - a world without borders, a world without boundaries.

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Subscription Rates
Within NZ: \$70 p/y
Australia: AV-COMM Pty Ltd, PO
Box 225, Brookvale, N.S.W.
2100
61-2-9939-4377
Elsewhere: US\$75p/y
All copies sent via airmail fast post

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our **TENTH** year!

COOP'S COMMENT

The UK is approaching 50% of all homes with access to digital TV. Some are via satellite (BSkyB), some via cable (BSkyB and other channels fed through fibre optic and coaxial lines), and some are terrestrial over the air (DVB-T). For around NZ/A\$1,500 the consumer can purchase a 28 inch/72cm 16:9 widescreen TV receiver with built-in terrestrial digital (called "Freeview") tuner. Connect it to a suitable rooftop aerial and immediately load up and enjoy 30 channels of TV. Not pay-TV, free to air TV.

For NZ/A\$2,800, a 28" widescreen with both built-in Freeview terrestrial and BSkyB satellite. TVs with a built-in Freeview or BSkyB tuner are called "IDTVs" - integrated digital televisions. Australia presently has 14 different IDTV brands available (25 models), of which 5 are capable of either HD (high definition) or SD (standard definition) reception. The UK marketplace has no HD sets - presently, only SD digital TV is transmitted on Freeview although BSkyB has experimented with HD TV. Australia has no IDTV Foxtel/Austar sets.

Although "digital TV presence" is nearing 50% of UK homes, in fact fewer than 3% at this time have an IDTV receiver. The balance have a set-top Freeview or BSkyB "receiver" which inputs digital but outputs analogue for connection to the viewer's old fashioned analogue TV receiver. The penetration of IDTV receivers in Australia is under 1%; in fact if you sum IDTV receivers and terrestrial digital STBs in Australia, it remains under 1% of all homes. However, if you add Australian homes with set-top digital to analogue boxes (Foxtel, Austar) to the homes with digital to analogue boxes, the total comes closer to 23% of all homes.

"Freeview" is a terribly clever bit of innovative naming. Virtually everyone in the country knows about, has seen, BSkyB either at a neighbour's home, in the local pub, or through cable. BSkyB will place a fully operational BSkyB satellite system in your home there for as little as NZ/A\$150, provided you agree to subscribe to a minimum level of pay-TV service for a period of one year. At the end of the year, you are free to do anything you wish with the BSkyB supplied equipment - it is yours. "Freeview" offers 30 TV channels and 10 radio channels through local terrestrial UHF band transmitters. The equipment is yours for around A/NZ\$300 but as there are no subscription fees to pay, that's it. For a period of time (now expired) UK residents were able to acquire a BSkyB system for around the same A/NZ\$300 figure even without subscribing although they did have to pay a modest fee (one-time A/NZ\$60 range) for a "Solus Viewing Card" which was the key to accessing free to air services such as BBC, ITV and so on, via BSkyB satellite.

Prior to BSkyB, and Freeview, British homes had access to 5 TV channels - not unlike the typical Australian or New Zealand home. In fact, for just over half of the total homes, that is still their plight. BSkyB made significant inroads by offering homes a satellite TV package absolutely free of charge (the home did have to pay for the installation labour for the system). By subsidising the hardware costs (that is - *giving the hardware away* in exchange for the home agreeing to a one or two year "BSkyB service contract"), the satellite service crossed the street from slow growth to runaway sales. *Programming*, not digital, drove it all.

Through all of this, BSkyB and then Freeview, the British government has taken a strong willed position that no matter what else happens, people *must* have continued access without monthly charges for the original free to air channels. The various BBC, ITV service channels, still to this day available on old-fashioned FTA analogue TV, must when migrating to digital terrestrial or digital satellite remain free to air there, as well. Of course there have been attempts by BSkyB to circumvent this requirement - "one-time turn-on activation fees" for BSkyB dish systems using free-to-air access cards, a charge-back to the BBC and ITV for "turning on their viewers" who have not subscribed to BSkyB - if Rupert's minions can conceive it, it has been attempted.

Murdoch's favourite argument involves ownership of Videoguard, the CA encryption system. "We created it, we own it, it costs us money to administer it - even for non-subscribers. So pay us - please - something for our trouble." Never mind that the British Government owns the BBC and BSkyB by carrying these channels as a "favour" to Mother England is gaining subscribers it might not otherwise attract if it did not have BBC on board.

For now, the firm owning the set-top box and controlling the conditional access/encryption system is the pilot of the plane. If you get on board, the rules are his rules and you play by them or deplane. World-wide, broadcasters such as the BBC are awaking to discover they have lost or are losing control of their self-created programming because their pilot has changed the rules once the bird is in flight. Six months ago, the BBC told BSkyB to "stuff it" - they were deplaning and booking their own flight. Good on 'em. Now, will others follow?

In Volume 10 ♦ Number 113

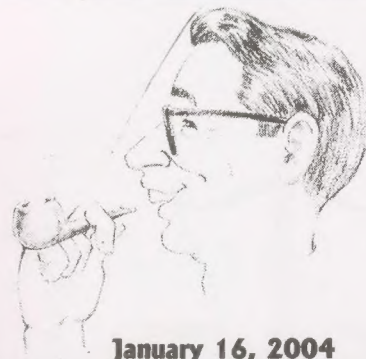
This is RG6 - right??? (Garry Cratt) -p. 6
Correction: Last month's front cover (and explanation) -p. 10
Blind Search Receiver review: Satwork ST3688 -p. x11
AsiaSat 2 "flips out" -p. 14
Selecting FM band transmitting antenna -p. 15
Optus B3 & C1: 30+ days older, wiser? -p. 19

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Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; Technical Topix -p. 15; SatFACTS Digital Watch -p. 23; With The Observers -p. 27; PowTek Blind Search -p. 28; At Sign-Off -p. 31

-On the cover-

More than 5 years in the making; New Zealand's Maori TV is finally on the air. Sort of. Almost. Soon.



January 16, 2004

SatFACTS Monthly January 2004 ♦ page 1

Fascinating stuff

I was very intrigued by your detailed report (SF#112) describing the web-importation of distant TV markets to far-flung planet locations. Now I can explain something I saw at a restaurant in New York, "The Russian Samovar." On each table is a tablet PC and a simplistic guide on the top cover advising the user to simply 'switch on' and 'enjoy' the direct-from-Moscow 'live television.' I was terribly impressed but could find nobody there who would or could explain how this 'miracle' was happening. Now I know! My congratulations to the very bright person who created this technology!"

Arnold T. Skill, CBS TV, New York

Uninteresting stuff

"SF#112: The first 8 pages of the feature material devoted to sending TV via Internet? What next? 'Satellite & Internet Monthly?'"

Keith Browning, NZ

Our front cover was a printing disaster (see p. 10, here for replay) and that possibly took the edge off of the message we attempted to convey. Technology, friendly or unfriendly, does not stand still. Imagine the owner of WIN-TV (Perth) now able to "watch" his station 24/7 from his home in Bermuda. Imagine CanWest's Australian (10) and NZ (3, 4) investments being on full-time display in the reception area of their Winnipeg headquarters. Imagine the owners of MTV Russia, who happen to be New Yorkers, proudly displaying their service in their USA corporate office. Closer to home, imagine TARBS no longer being dependent upon circuitous satellite links to access the likes of TGN for redeployment on PAS-8. Or a "community" of Russians living in a Melbourne enclave being tied to Moscow TV 24/7 with the final distribution leg being a cable system you design, install and maintain in their 200 unit living complex. Yes, the world is shrinking and time and distance is no longer a measure of anything important when the TV delivery system we described in December allows you to "space-shift" at will.

Bits and bytes?

"What is the relationship between bits and bytes when comparing thruput speeds of a delivery system?"

William Moll, Honolulu

256 kbps download is 256,000 bits per second. With header allowance, there are just over 8 bits in each byte. If the download speed is 256,000 per second, in 60 seconds it is 15,360,000 bits (per minute), divided by 8 bits in each byte equals 1,920,000 bytes per minute or 1.92 megabytes per minute.

Can it be dial up?

"My ultimate TV goal is to have real time, direct connection to US TV. Will this do it?"

KG, Sydney

It can but as a point-to-point service between a user and his/her remote location, it will not be dial-up open access for copyright reasons.

PROGRAMMER
PROGRAMMING
PROMOTION

UPDATE

JANUARY 16, 2004

Malaysia in English? Make of this what you will - past experience with Indonesian and Malaysian announcements being not good. Malaysia's TV1 *claims* its programs will become available throughout "Asia, Australia, Russia, the Middle East and most parts of Europe" by early in 2004 after the Malaysian government approved lease of a "Chinese satellite" (they mean a transponder on an unnamed Chinese operated satellite) "for RM1.2mil per year." Further, "TV1 will set up a department to dub the programmes from Bahasa Malaysia into English and eventually into other language such as Arabic and French." The official announcement reads, "Countries which want to receive information or news from our country will be able to do so directly from us by switching on their televisions." Try as we might, no "Chinese satellite" fits their announced coverage plans ("most of Europe - Australia").

Foxtel's footy plan. During 2004, all Foxtel pay-TV subscribers (cable, satellite) will have automatic "basic access" to 'Fox Footy Channel' without paying the normal A\$100 fee. Subscribers equipped with a new (yet to be offered) set-top box will also be able to select between four different camera angles during Footy telecasts, which will run 24/7 (24 hours per day, 7 days per week). The AFL is trying hard to convert viewers in NSW and Queensland to their sport and Foxtel believes the "no extra charge" offer for one year will create that interest. All of this launches February 1.

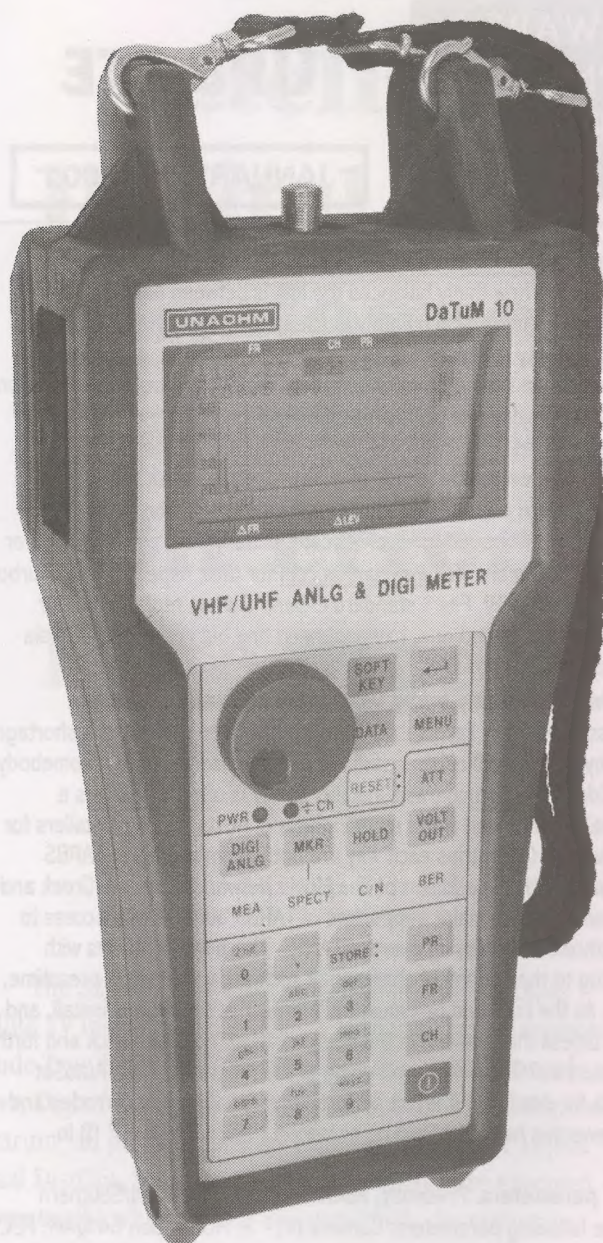
Mystery Taiwanese (Cantonese-Taiwan) service. It first appeared in mid-December, 1804 (176E) using Ku spot beam (12.681V) into New Zealand. Service has carried various Taiwan origin channels on and off, is being promoted by Best TV Ltd. (call 0800 990 168) where you will be told of options: NZ\$49 + GST per month or \$660 including GST with installation and joining fee waived (NZ\$248). Observer Craig Sutton notes, "a 60cm dish is required, the encryption stream appears to be Nagra, and perhaps they have not done their marketing research very carefully: Most New Zealand Chinese immigrants are Mandarin, not Cantonese speaking. Further, the transmissions observed to date in FTA test mode are NTSC and dreadfully over modulated; both audio and video." A check with one of the Taiwan channels being relayed (CTS Taiwan) got this response: "We know nothing about this - they do not have our agreement to relay our programming to New Zealand (or any other country). Backers of this one rumoured to be connected with ill-fated SPACE TV package of several years ago.

Non-mystery IMPACT TV. No testing (to presstime) but the parameters have been announced. 1804 (same as Taiwan service reported above), using 4 times 36MHz for NZ (spotbeam 1) and 2 times 72 MHz for Australia (spotbeam 2). A 76cm dish will be recommended along with a "Universal" (dual LO) LNBf. NZ coverage map appeared p. 29, SF#112; Australia's projected Impact coverage map appears p. 29 this issue. 36 x 4 or 72 x 2 will support approximately 36 programme channels.

Blue Kiss hard-core (OK for ACT, NT) appeared as announced (SF#112, P. 2) December 13th (As3S, 3669V, Sr 13.333). Viaccess 2.5 card importer Jacob Keness (61-2-96128 5777) reports, "All initial cards were gone by 15th. More on the way." Cards should also be available from most Australian suppliers (RRP A\$199 - lower prices for quantity); no NZ source yet announced. Viaccess red cam Ver 1.07 required; most allcam STBs tested "negative."

Paul Mullen, ex-Mediasat, can be found at 61-2-8425 4675 (Broadcast Australia).

Problems with Imparja service into Tasmania - at least opportune moment (Rugby Union) required one-by-one customer reloads of receivers and a series of phone calls plus expensive service visits by original installers. One reports, "I have taken Austar and Imparja logos off my truck - I don't intend to be the 'point man' for their problems any longer!"



DaTuM10 Terrestrial Digital and Analogue Television Instrument

- **Automatic Digital signal measurement.**
- **Simultaneous view of Seven channels.**
- **Spectrum Analyser with variable Spans, MAX, MIN, FREEZE and Dual markers.**
- **Auto Carrier to Noise ratio measure.**
- **50 memory 7 program Data Logger.**

DaTuM10 is a new hand held TV Signal Level meter that measures 45 to 860 MHz Analogue and Digital, COFDM and QAM. The signal levels of any 7 channels can be shown simultaneously in the new histogram function. Spectrum Analysis and Expanded Spectrum with 2 Markers enable a broad range of detailed and specialised measurements to be made. A moulded rugged Rubber Holster protects the DaTuM10 against knocks and falls. The keypad has been designed for use even in humid and dusty environments and a Pulse Encoder knob speeds function selection.

It detects Digital from Analogue, automatically adjusting the signal level read to Digital Channel Power and tuning to the centre of the channel. Measurements include Signal Level, D.C.P., Carrier to Noise Ratios, Vision to Audio Ratio, and Bit Error Rate estimation. The graphic LCD can be read in darkness or daylight. Clear Menus guide the user through functions which include mast or line amplifier powering and Data Logging. DaTuM10 employs precision signal level detection circuitry (superior to AGC detection) that reliably measures signals as weak as 20dB μ V and provides Peak and Average detectors.

Internal Ni-MH battery life can be extended with optional external batteries and the instrument can recharge whilst still being used from the mains switch mode power supply included or 6V DC.

DaTuM 10, exciting instrumentation that needs neither a mortgage to buy it or a sherpa to carry it. ©2003 Lacey's.tv

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Blowing the lid off

"The entire satellite retail scene in Thailand has been turned on its head. There are now at least six (competitive to one another) 'FTA' set-top boxes in local shops which have no cards, no CAM, no CI but with the assistance of a code change menu allow complete decryption of Nagra, Seca 1 and Irdeto 1. The code numbers change monthly and require an update using the receiver's RCU. The cost per receiver is in the range of US\$150 each. Additionally, hard-core satellite porno 24 hours 7 days is now available. The UK based 'Free X TV' is now available from NSS-6 on a SE Asia beam and already has an immensely loyal following. The cost for a lifetime subscription, in the form of a special CI module, is US\$100."

SiamGlobal, Bangkok

Noise, noise, more noise

"I purchased a Coship CDVB2000E for a customer who wanted ethnic programming from B3. As I always do, I pre-programmed the receiver for an overnight test before installation. That was when I discovered my FM radio reception (101.4 MHz, Auckland through a five element yagi above my house) had gone berserk - a loud swishing noise, not just on one station but all stations. The Coship switch mode power supply was generating so much noise (with the receiver in the standby mode, no less) all local (AM and FM) radio reception was wiped out. So much for the New Zealand testing which is supposed to catch designs that generate radio interference! And note the FM tuner was connected through quad-shielded cable to an outside antenna - the Coship is one very powerful noise generator!"

Paul Burton, Waipu Cable TV, Waipu, NZ

Switch-mode power supplies have "generated" lots of reports in SatFACTS through the years. Even the best designs fail to include basic filters in the primary side to shunt radio noise to chassis ground. Some that do this turn the set's "chassis/metal case" into an antenna - a

two-lead mains connection fails to include the all-important "shunt to ground" path mandatory for transferring ground loop voltages to the home's ground power connection. As for "testing" of radio interference by NZ authorities, think again. Importers of foreign-built radio products merely fill in a form supplied by NZ testing authorities and if they "check off" the radio is certified in another jurisdiction (such as Europe) the testing folks collect their fee and "approve" the application. There is no actual testing done unless the product has never been tested (and certified)

"elsewhere" previously. Which explains why you ended up with a receiver equipped with a power supply that generates significant amounts of "noise" from below the broadcast band clean up through the FM radio band. Shame on the supplier. "Certification" of a product for sale "in country" is obviously only as good as the original testing. Which in your case was very badly done, if at all, by NZ testing authorities.

Note: Some (not all) letters published here are edited for space available, grammar, spelling and punctuation as required. Content is not altered.

Correspondents may request "name withheld upon request" but must supply this information.

HARDWARE EQUIPMENT PARTS

UPDATE

JANUARY 16, 2004

How thin this string is. Abrupt failure of AsiaSat 2 just ahead of Christmas was forceful reminder to industry how thinly balanced the link is between full-time TV/radio/data, and, noise. Satellites fail monthly, someplace around the globe, others limp along at reduced capacity (the current series of Palapa birds, for example) providing far less service than their designers intended. AsiaSat is a public corporation with serious revenues at risk should As2 pack-it-up before its scheduled departure date (2010). Even more distressing to its operators - a failure is a reflection on someone's error or mistake, even if the cause of failure stretches back to the construction days at Lockheed Martin. We explore what may happen on p. 14.

C + Ku LNBf. They've been around for over 2 years, usually work poorly on one or both bands. Perhaps not anymore. Try www.satthai.com for their Aspen (brand) Turbo 4200 dual Ku and C band(s) LNBf. Fits a standard C-band dish as replacement for C-band LNBf. No, we have not tested one, have not seen one but readers in SE Asia say, "It works - is good value at US\$50."

Summary of hardware currently being used in SE Australia. "Austar's swap-out from wireless (MMDS) in Tasmania to satellite has been slowed by a shortage of willing installers. Anyone who will either install the dish themselves or find somebody to do it for them outside of the normal trade-installer family is offered A\$60 as a discount! A major area of contention is the unwillingness of Austar to pay installers for travel time and distances - 100km trips each way are not uncommon here. TARBS installs have risen sharply with the addition of The Movie Network package - Greek and other ethnic viewers were already major supporters of TARBS but now with access to movies as well, non-ethnics are crossing over for TARBS. There are problems with TARBS installs - relating to their constant changing of software versions (at presstime, V23.24 was current). As the card and box must be 'married' at the time of install, and boxes will not do this unless the software in the box is current, needless back and forth phone calls follow. Antennas? The best brand going at the moment is from AutoSat which leaves the Jonsa for dead. But it is not perfect - the elevation arm corrodes and freezes requiring a generous helping of fish oil or lanolin ('Magic Lotion')." (B in Tasmania)

Terrestrial DVB-T parameters. Presently, ABC/Nine/Ten/Prime/NBN/Southern Cross and WIN use the following parameters: Carriers (k) - 8; Modulation 64 QAM; FEC 3/4; Guard interval 1/16; data rate 23.053. And Seven Network/SBS use carriers (k) 8; modulation 64 QAM; FEC 2/3, Guard Interval 1/8, data rate 19.353. However, WIN is changing to the Seven/SBS parameters over the current month in the following sequence: Orange, then Central West, Riverina, Rockhampton, Toowoomba, Ballarat, Shepparton, Sunshine Coast, Canberra, Illawarra and finally NSW South Coast. Which means? DVB-T set-top boxes, digital-ready receivers will need to rescan to load the new parameters - obvious when WIN's channel suddenly quits working! Background material from <http://www.dba.org.au/index.asp?display=news&newsID=480>.

DVB-T HD receivers available in Australia? Nearly 50 SD (standard definition) DVB-T receivers are now on offer but far fewer HD (high definition) versions. These include: DGTEC DH-2000A, Panasonic QTR 2140, Toshiba HD-S23.

D comes after C. Optus/SingTel has placed order for Orbitel (brand) 24 transponder D-1 satellite; 4th quarter 2005 (D-2, 4th quarter 2006). Where to? Nothing official - some believe D-1 will go to 160E replacing B1, D-2 collocating at 156E with C1; B3 for now staying at 152E. B1 launched 1992; B3 1994. D-1 and D-2 will have active transponders below 12.25 (11.7 to 12.2 is one possibility) and this will allow D-2 collocating at 156E to add still more pay-TV transponders while acting as a backup to C1 at same location. Sky NZ recently signed agreement to extend its use of B1/D1 through 2020.

S 20 Satellite Digital and Analogue Television Bit Error Rate Meter



The S20 is a new hand held Digital and Analogue satellite TV instrument for 920 - 2,150MHz. Measurements include True Bit Error Rate, Signal Level, Digital Channel Power, Digital Carrier to Noise Ratio, Spectrum and Expanded Spectrum; all presented on an wide screen graphic Liquid Crystal Display. Some routine measurements are executed Automatically, whilst others are simplified. An optional Network Identification Table card will automatically identify satellites and their orbital slots from data stream info. The case is protected against falls and blows by a moulded rubber holster and the keyboard has been designed to withstand dusty and humid hostile environments.

Menus guide users through selection of functions that include powering an LNB, Programming QPSK reception parameters and Data Logger programming. Different parameter settings can be stored in 100 Program memories.

Those familiar with Unaohm's pioneering SBM105 Satellite BER meter have judged the S20 an instant hit.

Internal Ni-MH battery life can be extended with optional external batteries and the instrument can recharge whilst still being used from the mains switch mode power supply included or 6V DC.

Accessories included are the mains power supply/ battery charger and the moulded rubber holster.

S20, exciting Sat TV instrumentation that needs neither a mortgage to buy it or a sherpa to carry it.

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- **QPSK true BER and Digital C / N.**
- **Digital and Analogue measurements.**
- **Spectrum Analysis with two Markers and Full 10 MHz Span.**
- **MAX, MIN & FREEZE Hold functions for special signal analyses.**
- **View any 7 transponders simultaneously.**
- **Data Logger records Signal Level.**

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Branches in Sydney, Ulverstone and Woolgoolga

A piece of wire, a hank of hair -

WARNING: All coaxial cable is NOT created equal!

It IS RG-6, isn't it ??

The old adage "what you pay is what you get" certainly applies to the satellite TV industry. As a result of the push to sell things at a lower price than ever before, there is a tendency to "skimp" on raw materials, and product quality inevitably suffers. The poor quality of some components can easily be seen through visual inspection. For example a flimsy dish mount, distorted dish panels, bent feed struts, untreated bolts, a corroded feedhorn can all be seen with the naked eye. Other components require test equipment to verify quality and performance.

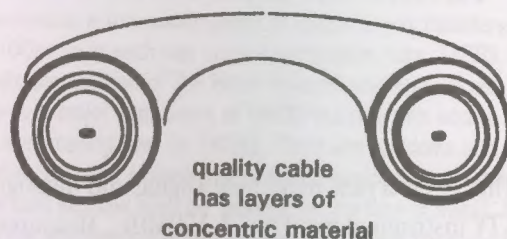
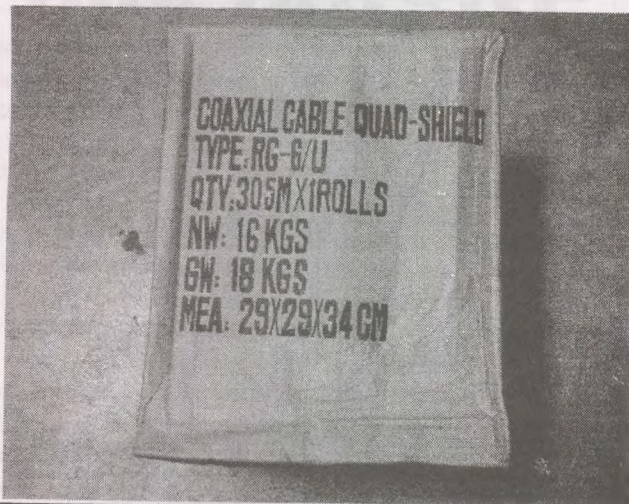
This is obvious when considering an LNB where critical parameters such as LO (local oscillator) stability and phase noise can be measured, if not by every installer. Satellite receivers can often be subjectively rated by the ease of use, menu layout, operating temperature, remote control layout, long term reliability and other user observations. Yet the most important part of any satellite system is often taken for granted. No matter how good the dish, LNB or receiver, unless the connecting cable is correctly rated the results will be disappointing.

We all know that top of the line coaxial cable costs twice the price of most economy brands, but what is often not known is the huge difference in performance. Perhaps the most visually obvious parameter of RG-6/U coaxial cable is the level of screening; how much "shield" surrounds the centre conductor. Satellite TV cable is rated as either dual screened or quad screened. Tri screened cable does also exist but is not commonly used in the satellite industry.

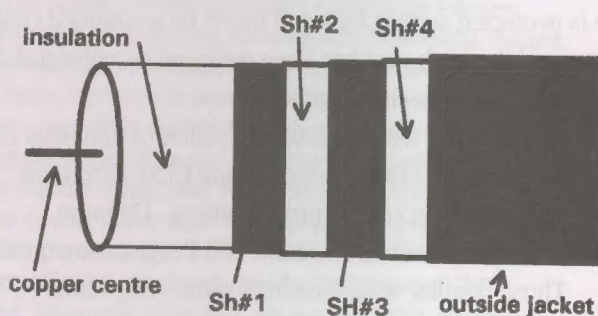
In the early days of satellite TV (1980), with no prior experience, satellite installers used dual screened cable and got away with it. Some even used RG-59 with its *soft* copper centre conductor !! Fortunately (at that time) there were no mobile phone towers in those days and few microwave links to cause the ingress interference problems ("ingress" - signals in the air, between 800 and 2,100 MHz, work their way into the cable centre conductor). However, as the spectrum in capital cities became crowded, interference became more of a problem, and quad screened cable was introduced for professional use.

Unfortunately, many newcomers to satellite installs lack an understanding of what the shield portion does, and why something approaching "100% screening" is important. Quad screened cable offers the best level of shielding, preventing the

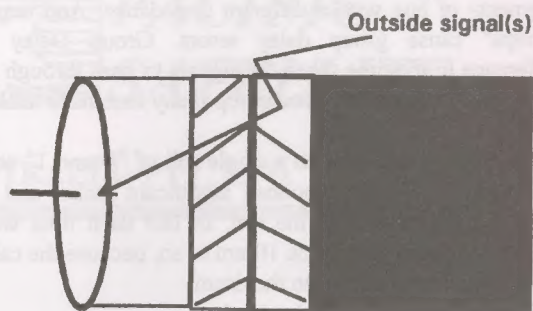
Garry Cratt (AV-COMM Pty Ltd) is concerned coaxial cables now appearing in the marketplace are at best of questionable integrity. The old adage, "If somebody can make it cheaper - they will!" is now a marketing force. What happens when cheap becomes the only criteria for cable selection? Find out here. (cgarry@avcomm.com.au)



CABLE basics. To transport radio energy, two separate conductors are required. The outer conductor (shield(s)) double as an interference "wall" protecting centre conductor from unwanted radio signal/interference pickup.

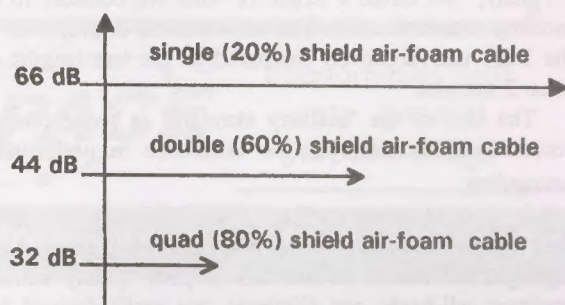


QUAD shield means there are four separate "layers" of shield protecting the centre conductor from unwanted outside energy reception. Fewer "shields" - less protection, more signal loss.

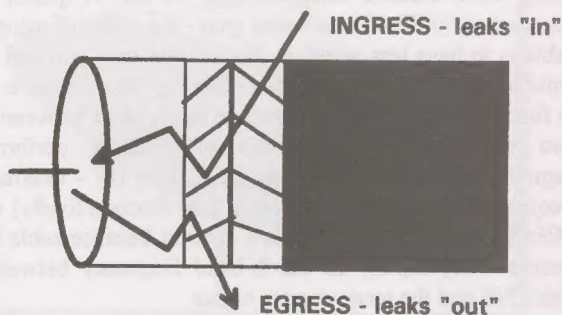


PENETRATION. When the shielding fails to stop "outside" source radio frequency signals (local TV, radio, two-way, cell-fone), the signals "couple" into the centre conductor and appear at the input to the satellite TV receiver, creating interference.

decibels of cable loss at 2,000 MHz per 100m

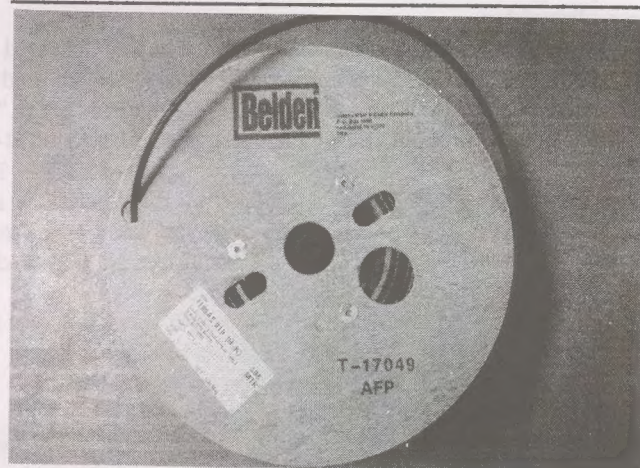


LOSS is directly related to (1) type and format of (dielectric) insulating material, and, (2) percentage of effective shielding. "Perfect" low loss dielectric is air but an impractical physical support for centre conductor to shield spacing. "Perfect" shield is solid copper or aluminium tube - impractical except for high priced CATV large diameter cables.



INTERFERENCE "leaks" in, satellite signals "leak" out when shielding is inadequate. 96% shield is the benchmark.

ingress of interfering signals, a problem in city areas where emissions from GSM phone towers, weather radar, aircraft radio altimeters and microwave point to point services are prevalent. Many of us are also about to discover this as digital terrestrial TV services are introduced. There are literally thousands of buildings wired in inferior RG-6 or even RG-59 that will require rewiring due to adjacent channel interference from digital terrestrial services.



In many satellite situations, the use of quad screened cable instead of the dual screened equivalent can mean the difference between a perfectly functional and non functional satellite system, so this choice is easy. Unfortunately, even commercial operators have used inferior dual screened cable on satellite installations that will now require rewiring.

Ingress is prevented by having an adequate "wraparound" protective "wall" between the signals that are in the "air" and the signals from the satellite dish, carried on your centre conductor. When the shield portion of "RG6" fails to stop the penetration of the cable to the centre conductor, terrestrial originated signals in the same frequency range as the LNB produced L-band IF (950 - 2,150 MHz) creep into the centre conductor creating interference to the satellite reception.

A further consideration is that even the best quality cable available in "pull boxes" is only guaranteed to 1,000MHz, whilst cable on a drum is guaranteed to 2,000MHz. Obviously cable from a "pull box" is unsuitable for satellite TV applications. But it is less costly and therefore, without knowledge of the dangers inherent in such cable, people buy it.

Today, knowledgeable installers understand that it is better value to spend more on a higher quality cable and be assured of system integrity. They know the cost of being called back to a job !! However the unstoppable push to skimp on quality has now reached the quad shielded cable market, and several new brands have appeared with noticeably poorer performance, compared to the industry standard.

In the "good old days" of *copper braided* cable shields (an era long gone), any cable with less than 90% "shield factor" was considered inadequate. A 90% shield simply meant that between the centre conductor and the outside world there was a woven braid of copper wire that enclosed 90% of the cable's outer surface; for signals to "leak through" to the centre conductor required that they somehow crawl through the 10% left unprotected with the shield. What has happened in the quest for reducing cable manufacturing cost has been a slow but steady deterioration of the "percent of shield coverage" on offer. Dual-shield cable often consists of a very thin aluminium

foil wrap loosely adhering to the insulating material between the centre conductor and the shield portion, over-covered with a very loosely constructed braided shield. The theory behind such cable is that the combination of the aluminium foil wrap adhering to the insulating material and the woven shield is supposed to be a state-of-art substitute for a 90-97% woven copper braid. *It is not even close.*

We "tested" two such brands in our quest to find a good quality cable.

Brand 1.

On first inspection, we noticed the cable was delivered on much smaller rolls and in much smaller boxes than are used by other vendors; even though the rolls were marked "305m." A quick check with our reflectometer revealed a length of 214m when we used the standard velocity factor of 0.83. The velocity factor of cable is determined by the dimensions and composition of the dielectric and if you know the "true" velocity factor, the "Reflectometer" test instrument will quickly advise you of the cable's length.

If our reflectometer said the cable length was 214m (not the carton stated 305m), then there were two possibilities:

- (1) The cable on the "reel" was short by 91m;
- (2) The velocity factor of the cable was not 0.83.

Unrolling the cable and measuring it confirmed it was more or less (within 2m) 305m. This left us with the unfortunate conclusion the cable's velocity factor was not 0.83. This is akin to discovering the V8 car you purchased only has six spark plugs. If the velocity factor is not 0.83, what could this mean? Well, for openers, this affects the impedance of the cable. What these folks have sold as 75 ohm cable is, in fact, *not* 75 ohm cable at all. Do we care? Yes, we do.

Everything about our satellite electronic system has been designed for 75 ohm impedance; the LNB output, the satellite receiver input - both operating with the assumption the cable connecting these two points will also be 75 ohm.

Cable of incorrect impedance causes a mismatch when terminated to 75 ohm equipment, and this causes (digital) bit errors. "Digital bit errors?" Unlike analogue format signals which can tolerate mismatches fairly well, digital signals become very confused when there is a "ringing" in the cable. "Ringing" is created by mismatch and it comes down to the very same bit stream data appearing twice, thrice or even more often at the receiver. The "real" signal appears first, then because of the mismatch, a microsecond later here comes the first reflected "ringing" and then another microsecond later the third and so on. The receiver basically says - "what the hell is going on here - *which* of these is *the real* signal???"

Confused by all of this ringing echo data stream train, the receiver decides there has to be some problem and the bit-error rate (the processing of the signal itself) goes up as the processing speed slows down. If the bit-error rate is high enough (the speed becomes slow enough), you end up with a "blue screen" - the receiver saying, "I give up. I cannot process this data stream."

Hand in hand with the wrong cable impedance comes "impedance bumps" - segments of the cable which because of manufacturing tolerance mistakes have a different impedance than the line immediately before and immediately after. Think of it as a mixture of diesel and gasoline in the fuel line of your Ute. First the engine has gasoline, then there is a teaspoon of diesel, and then gasoline again. The LNB signal flowing to the receiver, running into these sudden changes in line impedance,

slow up (or on rare occasions speed up) when they run into segments of line with a different impedance. And impedance "lumps" cause group delay errors. Group Delay is the difference in the time taken for signals to pass through a cable at various frequencies. Poor group delay manifests itself as Bit Errors.

All of this was found in a single roll of "Brand 1" economy RG6 cable. We also noticed significant jacket and screen shrinkage at the end of the roll. In fact each time we cut a length, the *braid* crept back 10mm or so, because the cable had been wound very tightly on the drum.

Inferior quality cable? Absolutely.

Brand 2.

Our first experience with this cable was a domestic B3 installation. After aligning the dish, cable was run down a cavity wall to the wall outlet. After connection, there was no signal! Removal of the cable and checking with the reflectometer showed the braid was open circuit halfway down the cable run. In other words, although the cable had come off the roll as one continuous piece, somebody at the factory had stopped the braid making machine half way along the length we pulled out of the box! So much for even the most rudimentary of checks at the factory - continuity between the braid and centre conductor over the full length of the boxed shipment.

Finally, we tested a length of what we consider to be the industry standard cable. The constellation display was clean, the BER was improved compared to the test lengths of the other 2 samples.

The cost of the "industry standard" is twice that of the "economical" brands, but the difference in performance is astounding.

It is not our intention to "bag" those inferior brands, no doubt they enjoy some market share. What this report sets out to do is highlight the results of the use of poor quality cable. The resultant call-backs can eliminate any profit derived from a satellite installation.

Cable losses

Setting aside the problems encountered with incomplete shields, badly varying cable impedance, and shield + jacket shrinkage, the most common problem with "economy cable" is line loss. By substituting low grade insulation material, or improperly designed "air bubbles" for a suitable "foam dielectric," the loss per metre/100m of cable increases dramatically. Consider a length of 100 metres of low grade cable which exhibits losses of over 60 dB. A quality LNB approaches 60 dB of conversion gain - the effect of using such cable is to have less signal at the receiver than you had at the input to the LNB! Not a big deal? Wrong. No receiver is going to function with such signal voltage levels. And between these two extremes, varying levels of receiver performance degradation which increases as the L-band (IF - intermediate frequency) goes up. I.e. - the cable may function (badly) at 950 MHz L-band but at 2150, it is a disaster because cable losses increase very rapidly as the L-band frequency between the dish/LNB and the receiver goes higher.

The difference between 100m of "economy" RG6 cable and the "industry standard" RG6 is frequently 30+ dB. Think of it this way - your LNB segment just "lost" 30 dB of gain at the "high L-band frequency end" because you saved a few cents per metre by selecting the economy-priced cable!



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The printer screwed up!

THIS is what the two COMPARISON photos were supposed to look like!

In SF#112, we thought the most effective way to "demonstrate" to you how the video quality of an Internet fed live sporting event compared with the quality of satellite TV was to locate an event appearing on both simultaneously. There are two photos here; one (at the top) is a USA NASCAR race distributed via Intelsat 701 during October. The bottom photo is the same race, one second after the top photo, as viewed on a progressive scan PC screen. The time difference was required to slide from satellite-screen to Internet PC-screen with the camera lens. If you look closely, you can see the time-mark is "-25.09" on the satellite image and "-25.08" on the Internet image (both lower right).

Of course you can tell the difference between the two (yes - the satellite image is slightly sharper). In fairness to the Internet delivery system, the satellite guys have had 33 years to refine their product while the Internet version is only months old from start-up. However, there are (many) satellite channels of lower grade video quality than the 256/384 kbps Internet fed transmission.

What does the future hold? As both the origination site (where the TV programmes originate or are fed into the "web") and the receiving site (such as our SatFACTS office in rural northern New Zealand) must have a minimum of 256 kbps (called "Jetstream" or "Whoosh" in New Zealand) web service, until such "broadband" links are routinely available for the majority of the users, this will not be a "universal" optional service. For repackagers such as TARBS (even Foxtel and Sky NZ), converting from satellite links to fibre web links seems like a near-future option. Simultaneously, 24 hour 7 day (24/7) satellite links delivering full-time distant TV choices to Pacific locations still unserved by high speed Internet will also favour some.

Mid-term (the next few years), improvements in the compression technology will significantly improve the video quality on Internet, and expand the ability of those with slower speed connections to participate. The people who are now pioneering this technology have opened a door previously closed and believed nailed shut. Yes, it is now possible to send any channel or group of channels world-wide using "the web."



ABOVE - NASCAR race sent via Intelsat 701 from USA to Pacific, real time, live. Normal satellite reception in a MCPC format in channel approximately 8Mbps.

BELOW - Same NASCAR race as received via Time Warner/AOL cable TV system in New York (City) through Internet (web) connection and a TBS channel cable feed. Time difference - 1 second (allowing physical moving of the camera from Intelsat fed to Internet feed). The data rate here averaged 384 kbps, or approximately 5% of the Intelsat data rate. Yes - some clever pre-transmission video "processing" is done before Internet.



The debate continues -

BLIND SEARCH: The DMS International ST3688

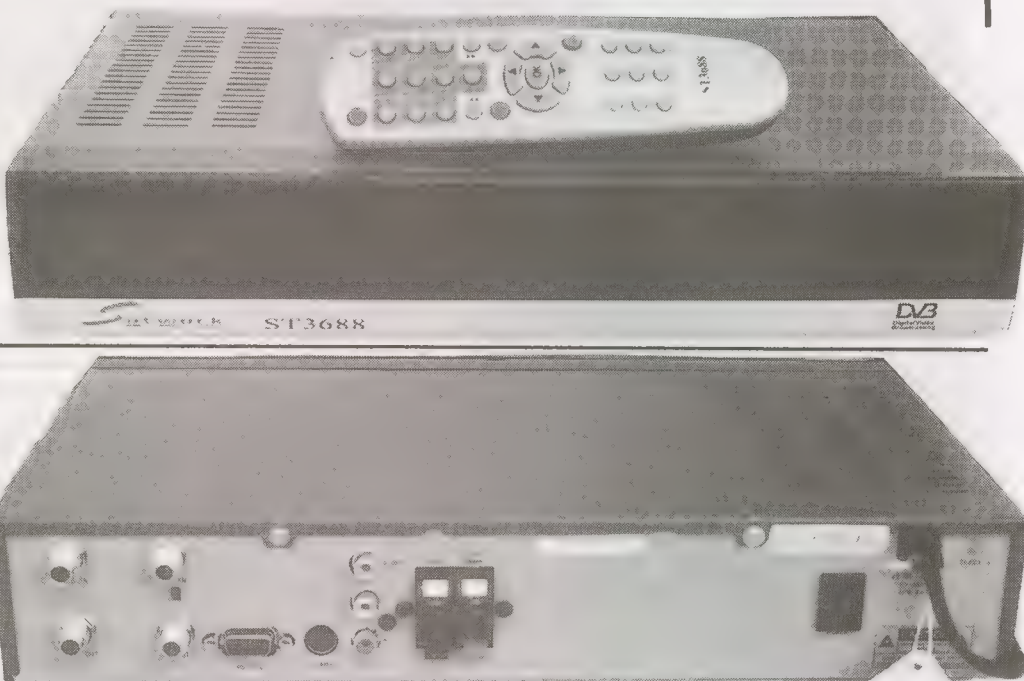
If nothing else has happened, the introduction of blind search has revitalised the free-to-air satellite industry's chat room discussions. If you want to start an argument, make a statement applauding (or denigrating) one of the existing "BS" receivers and then stand back - the bits will fly and the language will grow "X" rated rapidly!

Blind search? When a free to air receiver departs the factory of origin, manufacturers preload various satellites and then within that satellite's memory category the parameters for SCPC (single channel per carrier) and MCPC (multiple channel per carrier) services. But parameters change - new services begin, old services die, symbol rates are modified, FECs changed. If this happens after the receiver leaves the factory

(as it does daily), when the receiver finally ends up in your hands, it is "yesterday's newspaper." The user has the option to go to a web site (such as www.lyngsat.com) where all of the current (to that day) parameters are listed, and then manually enter the new numbers or start-up services into the receiver. If the receiver is successful locating the newly added services, they at that point become a permanent entry in the receiver's memory.

Blind Search offers an additional option. By telling the receiver a few basic parameters, the receiver will "blindly search/scan" for all signals between two L-band frequency marker points you enter from the remote control unit. If you

enter 950 as one marker and 1450 as another, and push "start" the receiver moves through the 950-1450 L-band region in 2 (or 4) MHz steps, stopping at each step to rapidly sort from a low megasymbol rate (such as 2.000) to a high rate (such as 45.000), and as it does this to check for the FEC as well. When the receiver finds a signal on a frequency (such as 980 MHz L-band) it hangs around long enough to zip from 2.000 - 45.000 symbol rate, and once it detects the correct rate, it will scan from FEC 1/2 through FEC 7/8. When the receiver processor verifies it has located (1) an active frequency, (2) the correct symbol rate, and, (3) the designated FEC, it drops these numbers into the receiver's memory chip and moves on looking

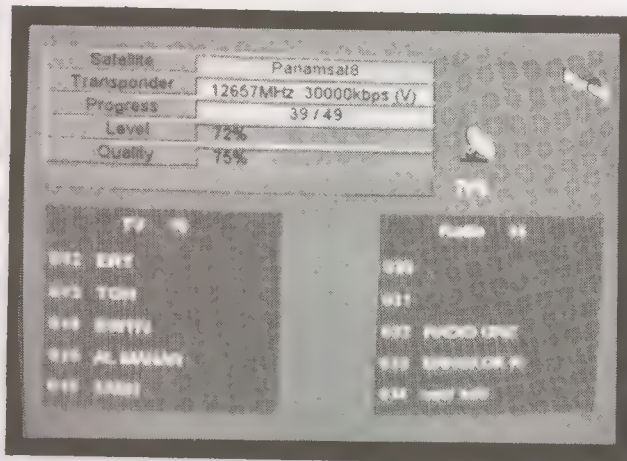
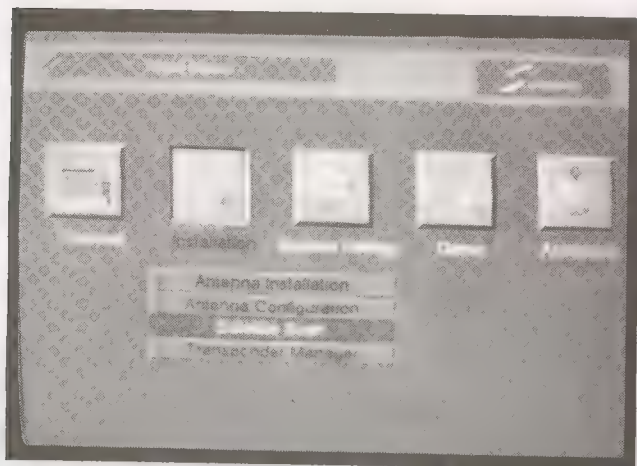


JUST the basics. No SCARTS, V + (2) A , "S" outputs. 3,000 channel memory, no dupes, moderately fast full-bird search, good sensitivity. What's missing? Read on.

The UK's Blind Search "Master" Roy Carmen on the "status of Blind Search IRDs"

Carmen introduced us to the original blind search (Coship) in SF#107 and has subsequently championed the concept. His January 2004 comments:

"It is early days for blind search. It is my belief the Chinese manufacturers are intent on putting things right. I understand the Innovia designers are removing the 'game' in the software and that should provide an additional 3000 channels of storage. However, the current design also refuses to blind search for M/s rates below 2.700 and that also needs correcting. The Satworks gained an additional 1500 memory channels by eliminating the Chinese language option; if they killed the silly games, perhaps another 1500 memory slots would be available. If receivers with blind search are memory limited by available processor capability, then all nonessential (search, memorise) functions should be left out."



TO initiate a "blind scan," follow menu prompts selecting scan parameters. Receiver "knows" 950-1450 standard L-band IF range but can be re-educated with different parameters to suit your LNB(f). In blind scan of a satellite already in memory, it does two consecutive scans - first in 2 or 4 MHz steps through full IF for both polarities, then as a final check, in-memory factory loaded transponders. B3 loaded here.

for the next signal. Most BS receivers do this on both polarities using the 12-13 or 18 volt LNBf switching system as a driver.

The Satwork ST3688 is the current BS receiver from the folks who started this evolution (DMS International introduced the original Coship receiver). The initial Satwork version (ST3618; SF#111) was stuck on 1,000 memory channels and if you rescanned a previously scanned bird, it stacked up the channels a second time, further depleting the shallow memory capacity. The 3688 solves these problems - 3,000 memory channels, no more duplicates (when it locates a service already in memory, it on-screen advises, "already found").

There is a paucity of Pacific region satellites "in memory" - and while you have the option of renaming pre-loaded satellites, the quickest and easiest way of getting started is to "adopt" a memorised listing for a satellite you will not use at your location. This seems like a software-correctable situation if and when there are suitable sales in the Pacific.

We, for example, "adopted" PAS-8 Ku since there is no service to NZ from this satellite. The downside of this is PAS-8 Ku was factory loaded with transponders we cannot see here (the photos above are from Optus B3, under the PAS-8 Ku heading). Downside: Unless we have missed something, two downer points. (1) Even with DiSEqC on board, short of a multi-satellite/multi-LNB system, the 3688 blind searches only one satellite at a time (i.e. it will not move across the arc for you). (2) We cannot confirm what the lowest megasymbol number the search routine will accept - it will do low numbers (such as Fashion TV 2.626 on As3) if you do a single (SCPC) search specifying the exact parameters; it seems to miss this service in a blind search.

If the ST3618 was "entry level," the new ST3688 is graduate level. It plays well, has good to above-average sensitivity, blind searches reasonably fast (one full satellite in about 5-7 minutes). This is a serious blind search contender.

DMSi's ST3688 - the detail

Memory: 3,000 channels of TV (or radio; mixed); SCPC and MCPC for either C or Ku or S bands (with appropriate LNB LO entry in menu); PAL-NTSC auto conversion; DiSEqC 1.0 and 1.2 plus 13/18V plus tone plus 0/12V switching; Subtitle including VBI teletext; RF modulator output {PAL-B/G/D/I/K and NTSC}; AC3 digital audio output; Picture in graphics (allows viewing one channel while entering others into menu); Compliant: Fully DVB-S/MPEG II; Channel manager: Sort, edit, delete, add (new or replacement channels); Upgrade through PC to STB (constantly available web site <http://www.dmsiusa.com/software.htm>) which, uniquely, includes text of latest upgrades and discussion by users of receiver operational characteristics. Price and availability from tim@dmsiusa.com or Tim Heinrichs, DMS International, 320B Northpoint Parkway SE, Acworth, Georgia 30102 USA (tel + + 1-770-529-6800).

The "state" of blind scan - our view

It is all about two factors - neither of which are today really "ready" for Blind Search. One is the processor speed, the other is the memory capacity. The designers of receivers have been uncertain to date that Blind Search is the "next coming" and when there is uncertainty about a new feature, they tip their toe into the water by merging BS with other features. Why Satwork and Innovia stick simplistic on screen "games" in their boxes defies logic - games require memory space and reduce the capacity for channel storage. A memory is finite, waiting for the next generation with greater capacity. Processor speed is also finite, a function of the current onboard capability available. A high speed, error free, find-everything-there search is very demanding. Too demanding for today's chip-ware. But it is a start, although don't expect the name brand receiver folks to jump on this bandwagon until the chip-ware improves. Throwing out a language capability (such as Chinese in the Satwork) to gain memory space is a tough marketing decision few will make. Someday, chip-ware willing, even Roy Carmen will give thumbs-up to a design. But not yet. In the interim, what we have is a major step forward from factory loaded search routines.

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AsiaSat 2's Christmas Hiccup: Had Santa been drinking?

Going back to 1972, there are three "common" reasons why a multi-hundred million dollar satellite fails - in orbit.

#1/ The solar sunlight system converting rays into volts faults, most often at the command or control level but even solar panel arrays have failed.

#2/ The satellite's attitude control system fails, creating a scenario where the on-ground controllers are no longer able to keep the satellite pointed at the correct "boresight."

#3/ The satellite is physically damaged by a collision with something else wandering around 36,000km above the equator, perhaps piercing the satellite's outer protective shell and destroying one-of-a-kind circuitry buried inside the machine.

AsiaSat 2's abrupt failure Christmas eve is being blamed on number two - ground controllers lost command control and the satellite began to wobble in space (AsiaSat dug deeply to discover the seldom used word 'nutation' to describe their predicament). The sequence released by AsiaSat appears here.

The *official* explanation is a loss of satellite attitude - it was no longer pointing to earth correctly, compounded (December 24; 0346UTC) by AsiaSat 2 control sending the wrong instruction to the satellite.

Andrew Rajcher (Axiom Compusat Services; Australia) reported on a contact with AsiaSat personnel, "(The satellite) does *not* have power problems. For the last three days there have been some oscillation problems which means they have had difficulties keeping As2 in its correct position."

Perhaps. One of the first rules when there is a power shortage is to shut down heavy power using transponders-MCPC transponders (such as Saudi, Euro Bouquet). This was done on at least two occasions as far back as December 19, 4 days prior to the initial shut-down. And when the initial shutdown occurred, only these high power transponders disappeared; the lower power Chinese SCPCs remained active and at normal levels. None of this fits their explanations.

The key here may well be the December 24 0346 "inadvertent command" sent by ground control. Faced with a powering problem, someone on the ground incorrectly commanded the satellite, perhaps misinterpreting a power problem as an attitude discrepancy. Note that AsiaSat did not contact manufacturer Lockheed Martin until after they had "pushed the wrong button."

Fact: AsiaSat is a public stock held company. How they responded to the problem, what they said, would/could have a dramatic impact on the stock market value. At the end of the day, when the "event" is over, this more than anything else is what matters.

More facts: As4 was "mysteriously" cleared of all traffic December 23. In the event of a total As2 failure, As4 would logically be repositioned to take over the As2 location. Clearance of As4 was 24 hours before the "real" As2 problems became evident.

Conclusion? Not everything about this failure has been released. AsiaSat 2 is almost precisely "half-used" - half way through its expected lifetime. This particular problem may well

What AsiaSat says happened

Bold face listings were observed by SatFACTS readers separate from the AsiaSat "official" explanations appearing below.

December 01: As4 (122E) has changed programmers in 3881Hz MUX.

December 02: As4 (122E) 3881 MUX returns to original channels.

December 19: As2 Euro Bouquet, Saudi TV MUXs shut down for several hours each; no explanation.

December 23: As3 Euro Bouquet, Saudi, WorldNet MUXs shut down for over an hour - no explanation.

December 23: As4 3881 suddenly shuts down; no signals through this satellite.

December 23 (0630UTC): "As2 telemetry indicates unexpected attitude nutation; cause unknown."

(Nutation? "*Oscillation of a spinning top.*")

December 24 (0346UTC): "While attempting station keeping procedures to reduce nutation, a 'safe mode' software command was inadvertently transmitted; all C-band channels shut down as pre-programmed.

December 24: (0355UTC): "Reactivated C-band transponders one by one."

December 24 (1830UTC): Euro Bouquet, Saudi and WorldNet MUXs missing from satellite.

December 24 (> 1900UTC): Significant drop in As2 signals still operational.

December 25 (0000UTC): "As2 manufacturer Lockheed Martin proposes steps to reduce nutation. Procedures fail, nutation increases dramatically."

December 25 (1900UTC): "All As2 traffic lost as nutation increased, footprint altered significantly (1)."

December 25 (2000UTC): "21 Chinese SCPC TV services, others are shifted from As2 to As3 in massive move affecting 50 services." (Note: Each service had to reposition its uplink antenna from As2 to As3)

December 25 (2300UTC): "New procedure used to correct nutation problem."

December 26 (0400UTC): "AsiaSat 2 service restored - satellite nutation ceases."

December 26 (0745UTC): "As2 returns to normal service."

December 27 (1900UTC): E-mail message to commercial NZ operator using As2 services brought this response:

"Our satellite AsiaSat 2 experienced some station keeping problems on December 26 morning. It is now back in normal service. For television reception, if you are still facing problems, please try to reset your receivers; Winnie Pang, Corporate Affairs Manager as wpang@asiasat.com."

1/ Boresight shift affects uplinks as well as downlinks.

lead to an insurance claim - creating money for AsiaSat and at the same time allowing them to move As4 to the As2 position out of concern that a long-term, more permanent failure of the As2 bird might be next. Stay tuned - this one may not be over yet as we are likely to see in the next 90 days.

Selecting the appropriate FM band transmitting antenna

There are presently more than 500 audio service channels available on satellite in the Pacific. If you live or work in a "radio-deprived" region, you are encouraged to check out SF#78, #80, #81 and #98 where we described low-power 5-20km service range FM (88-108 MHz) band radio stations you can activate with a satellite audio feed for a few hundred dollars. The installation is total simplicity although a few skills (to be learned) will make your FM radio broadcast range better. It is as simple as this: A satellite receiver creates reception from an audio fed channel and through a RCA-RCA lead you transfer that "sound" mixture to the input of a low power (300 milliwatt - 0.3 watt up to 10 watt) FM broadcast transmitter. If the FM transmitter is in turn connected (through something as simple as RG6 cable) to an FM transmitting antenna, you have an instant local radio station with the ability to plug in a microphone and customise the programming by speaking into the microphone. It does not get much simpler than this (1).

The Frequency Modulation (FM) "broadcast band" is typically located between 88 and 108 MHz. This is a wavelength region where signals do bend over hills, flow through trees and heavy vegetation, and work well to portable radios as well as FM-band-equipped vehicle radios. However, the basis for 100 MHz region transmissions remains (like all VHF and UHF) "line of sight or "LOS" so attention to suitable good engineering practice(s) will pay handsome dividends in determining just how far your low power transmitter will travel.

Height versus power

Height, measured as "above average terrain," is the single most important transmission element - far more important than transmitter power. A 300 milliwatt (0.3 watt) transmitter on a tall elevated location will do far better than 10 watts on a stub mast above your house - unless of course your house is on a hilltop.

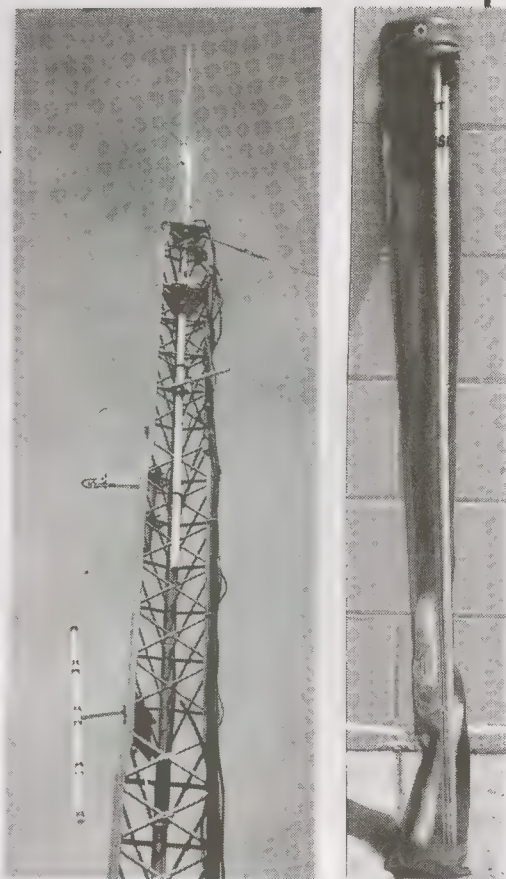
But height above ground (or "above average terrain - AAT") can be a trap. If your transmitter must be located some distance from the actual transmitting antenna, the interconnecting "transmission line" cable (such as RG6) will attenuate (reduce in signal level) the transmitter power actually arriving at the antenna. A 50 metre length of RG6, connecting the transmitter to the transmitting antenna, will cut your transmitter power in half- cable losses. There is, therefore, a "balance" between height above ground and transmission line "losses."

1/ If you are reading this in a "radio deprived" region, such as Solomon or Niue, forget about the local rules - just do it. The locals will be delighted with your initiative and you may be elected "mayor" in the next election. In NZ, you are allowed to operate a 300 milliwatt (0.3 watt) transmitter without a license - which with a suitable antenna will provide 5km coverage in all directions.

Comet
CFM-95SL

B-T BTY

Ramsey
dipole



COMET CFM-95SL covers 88-108 MHz (adjustable by user to frequency), is 2.3m tall, weighs 1.1 kgs and is available from Comet Co. Ltd, Japan (available through www.hamradio.com).

The correct answer is to get the transmitting antenna as high as possible above ground and surrounding terrain, while keeping the length of the transmission line to a minimum. If there is no way to implement the transmitter with a short run of transmission line, the next step is to choose a transmission cable with lower loss (than the commonly available RG6). RG11, for example, reduces losses by 50% and CATV ("cable television") hard-line reduces the losses by 75%. If you have a choice between a higher (taller) transmitting antenna, and, more power - always go for the taller antenna.

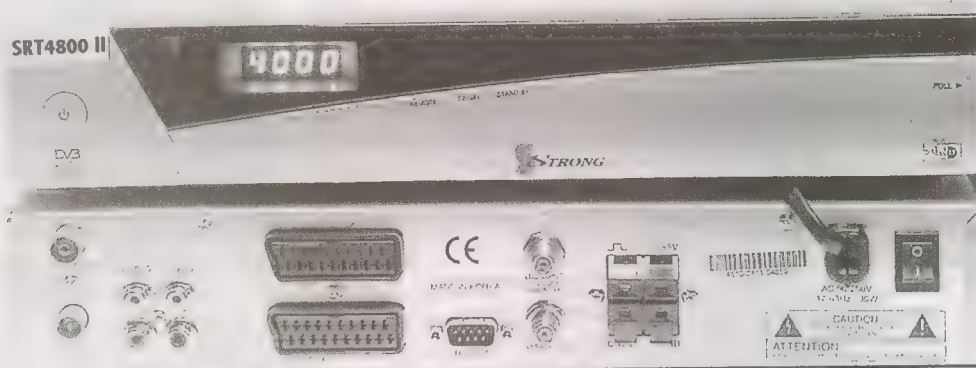
Antenna "gain"

It is possible to multiply the effective transmitter power many times with a careful selection of an appropriate transmitting antenna. There are two ingredients to making your low power FM station stronger and better heard over greater distances, other than antenna height (AAT - above average terrain) and transmitter power. The first is the "radiation angle" of the transmitting antenna. All antennas radiate/transmit a "pattern" or series of concentric circles. The trick is to create an antenna which retains the maximum direction of transmission down

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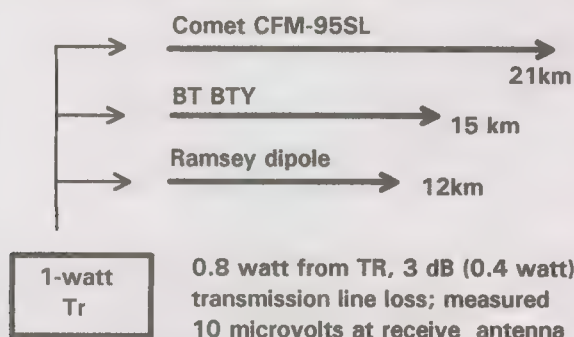
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low, close to the (visually sighted) horizon as "seen" from he transmitting antenna. An antenna that radiates or transmits straight up, for example, would only be good if you were trying to reach aeroplanes (or the stars!). By the same token, a pattern that is straight down will only reach the immediate ground at the bottom of your support tower or mast. The best compromise is to configure the transmitting antenna so that it sends the maximum signal straight towards the visual horizon as seen from the antenna proper. This is called a "low angle of radiation" and the design of the transmitting antenna creates the desired pattern.

SatFACTS has been testing various transmitting antenna configurations for more than a year, using a low power FM transmitter on 107.1 MHz from a hilltop location where the visual horizon is around 20km away in the best case. Ideally, we want to cover with maximum signal every spot from the base of our transmitting antenna support structure (see photo) to 20 km distant so that any FM radio receiving set located within that "visual coverage region" receives a signal strong enough to be noise and static free. Four different transmitting



The "system"

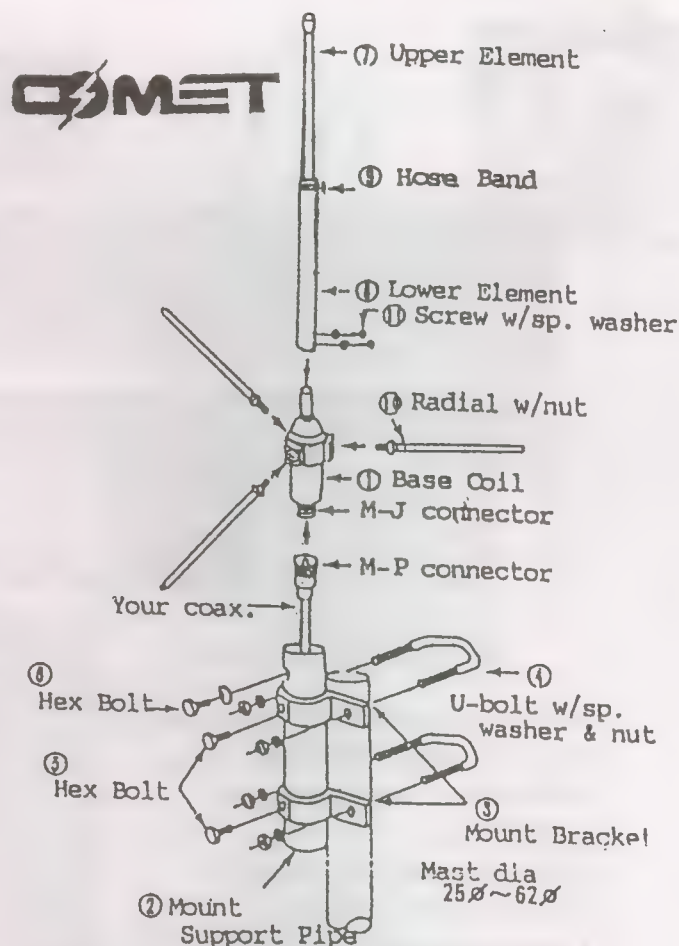
The FM band transmitter is a Ramsey Electronics FM-100, nominally 1.0 watt output but adjusted to 0.8 watt for normal operation; 107.1 MHz. At 10m above ground - Ramsey dipole antenna in PVC housing. At 13m, Blonder Tongue BTY modified broadband antenna. At 18m, Comet CFM-95SL. Using dipole antenna (107.1 MHz) and spectrum analyser, each antenna was measured to the limit of 10 microvolt service level, represented by distances shown in diagram above.

antennas have been carefully assembled, tuned for peak performance, and the results measured over a period of months.

Antenna performance

Ideally, each antenna under test would be mounted at the same location on the support tower; the same height above ground (AAT). Unfortunately, two antennas cannot occupy the same physical location without creating interference between one another so some adjustments in the measurement techniques are required. The photo here shows three competitive FM transmitting antennas, each connected independently for test purposes to the 0.8-1.0 watt Ramsey FM transmitter.

Ramsey Electronics (www.ramseyelectronics.com) offers a transmitting antenna constructed from 300 ohm flat-line



COMET (not related to Australian DTH installation firm!) CFM-95SL is professional grade (200 watt) omni directional (360 degree coverage) 5/8 wave ground plane antenna with good low-angle radiation.

housed in a PVC pipe support structure. The antenna claims gain in the region of 3 dBi. It is the poorest performer of the trio, primarily because the PVC housing is not sufficiently "weather-tight" and over a period of a few weeks water collects inside the housing causing significant degradation of the antenna's performance.

Blonder Tongue's BTY2-FM (available through Toner Cable Equipment Co as www.tonercable.com) is an extremely high quality product capable of several mechanical configurations including omni-directional horizontal polarity. We will revisit this unique antenna further in a future issue. In the test format shown here, the antenna is moderate second to our top rated choice.

Comet is a Japanese firm with a broad line of commercial antennas for HF, VHF and UHF. Their CFM-95SL is a 5/8th wavelength vertical antenna with a trio (3) of ground radials. The radials pull the transmitted signal "down" to the horizon creating significant gain for the system. It, like the other two, is a full circle (360 degree coverage) transmitting antenna which may not in all applications be the "coverage pattern" you most desire. We'll explore other options in a future report.

If your objective is to reach in a complete circle all receiving locations within visual line of sight (V-LOS) of the transmitting antenna, with a signal strong enough to be properly heard on even a portable FM radio, the Comet antenna is the correct choice.

The last 30 days of Optus C1 & B3: Changes in Modus Operandi

The "maturing" of the Optus C1 (156E) loading with heavy emphasis on preparation for a yet-to-be-detailed Foxtel channel expansion continued through December into January. Simultaneously, Optus B3 (152E) loading increased with services moving from C1 to B3 accelerating. Note this is a change-by-change date sensitive report; some events happening early in the period (such as December 16) will by the end of the report have changed yet again.

C1-

6 December: T5/12.487V (previously a weak, unidentified SCPC) turned on as MCPC equivalent in strength to Aurora T3/12.407V. On NANZ beam, 30.000, 2/3 (no NIT) loading 2TV, 3 radio (all FTA) including WIN and ABC WA. This would later disappear (December 19). The NIT sequence for the pay-TV transponders changed to: T17, T12, T15, T13, T18, T19, T11 (this being Austar Interactive). The network label for all 7 changed; was 'Satellite DTH,' now 'Foxtel Satellite Live.' T17/12.558H (27.800, 3/4) no longer carries three bouquet table (moved to T12/12.278H, Sr 27.800, 3/4). This means that while T17 remains as "home" for Foxtel and Austar IRDs, some IRDs (will) require going to T11 to reload the bouquet.

9 December: T9/12.647V, off since 15 November and previously Optus data which moved to B3 repowered with new parameters. It is NA beam, 12.647V, 27.800, 3/4 and is a clone of T8 airing TVSN FTA labelled as 'test'.

10 December: For this day only, T9/12.647V, 27.800, 3/4 was used for tests of NDS simulcrypt (with companion Irdeto). During tests, there were 12 PMTs but no SDTs; to most IRDs those 12 channels are 'hidden.' Simultaneously, NDS encryption added to 5 of 7 pay-TV transponders (T12, T13, T15, T18, T19); T11 (Austar Interactive) and T17 ('home') did not add NDS. T19/12.638H (27.800, 3/4) now has channels divided into two PATs (loading tables); see December 16 for channel lists. The 7 pay-TV transponders each have an extra channel added, labelled 'SPI Dummy' followed by a numeral. The numerals are identical to the transponder ID numbers in the NIT. As of this date, these new channels have no content. Assumption: SPI may stand for 'Special Programme Information' - or perhaps ran out of room to include a "t."

11 December: T9/12.647V returns to being a clone of T8, running only TVSN. T14/12.438H (29.473,

3/4) still running a single 'real' channel, labelled C1/T14 was found to have 22 PMTs but only 1 SDT. By returning to the original PIDs used with this transponder, frame frozen FTA pictures were visible on 10 programme channels; nothing on the balance of 12.

14 December: T14/12.438H and T20/12.688H today changed symbol rate from 29.473 to 27.800; both become clones of T8, airing only TVSN (FTA) labelled as 'Test'. T1/12.305V, previously a clone of T8, remains 'powered' but unmodulated. All 'fake' teletext PIDs (i.e., teletext PIDs used for non-teletext data) no longer in use. Only Austar's ABC channel 2 (12.638H, 27.800, 3/4 with text PID 1016) has subtitles available. SBS's teletext is also running but with hidden PID (1056). The History Channel has hidden second audio channel (possibly used for advert switching in NZ).

16 December: Major changes to pay-TV loading this day. The NIT is now 12 transponders (8H, 4V) as: T17/12.558H (home), T12/12.358H, T15/12.478H, T13/12.398H, T18/12.598H, T14/12.438H, T19/12.638H, T11/12.278H (Austar Interactive and bouquet menu). All except T11 are 27.800, 3/4; T11 remains 30.000, 3/4. Note: The 4 vertical channels are on the NA beam.

10 of the 12 have simulcrypt NDS/Irdeto; T11/12.278H and T17/12.558H are (several versions of) Irdeto. The loading as of this date follows:

T4/12.447V, 27.800, 3/4 with 8 (TV) channels: (1) Sp1, (2) SPTA1, (3) iTV5, (4) SPTA2, (5) SPTA3, (6) SPTA4, (7) SPI, (8) SPI Dummy 16 (no PIDs here). Ch 1 (Sp1) is only channel of the 8 currently with video and audio PIDs; in its' PMT are entries for 5 video PIDs and 5 audio PIDs. Currently colour bar tests and the EPG is a copy of Fox Sport's EPG. Channels on this transponder were later changed (see December 19).

T7/12.647V, 27.800, 3/4 now loads 12 (TV) channels: (1) FBO1, (2) FBO2, (3) FBO3, (4) FBO4, (5) FB13, (6) FB14, (7) FB15, (8) FB16, (9) FB17, (10) FB18, (11) FLO1 (not in use), (12) SPI Dummy 8 (no PIDs). Ten channels in use are CA, EPG suggests they are running movies; first four channels have AC3 audio at constant data rate of 0.376MBit/s. FBO? Probably stands for 'Fox Box Office' - video on near demand channels.

SatFACTS' continuing series reporting on the parameter changes, loading for new C1 and relocated B3 Australian satellites; covering December 5 to January 7.

T8/12.607V, 27.800, 3/4 now loads 11 channels. (1) FBO5, (2) FBO6, (3) FBO7, (4) FBO8, (5) FB19, (6) FB20, (7) FB21, (8) FB22, (9) FB23, (10) FB24, (11) SPI Dummy (no PIDs). As with T7, the 10 FB(O) channels are in test use, are CA, airing movies according to their EPGs. The first 4 channels also have AC3 audio.

T9/12.647V, 27.800, 3/4 now loads 11 channels. (1) FBO9, (2) FB10, (3) FB11, (4) FB12, (5) FB25, (6) FB26, (7) FB27, (8) AO01, (9) AO02, (10) SEO1, (12) SPI Dummy 10 (no PIDs). The FB and AO channels are CA and according to EPG, airing movies - first four have AC3 audio. The two "AO" channels possibly intended for "adult movies" as the Foxtel/Austar service is "Adults Only" (on the main event channel at night). The AO channels also, uniquely, have their censorship classification preset to "R." The "SEO1" channel might be set aside for "special events; it is currently CA, airing wrestling and an events preview according to EPG.

T11/12.278H, 30.000, 3/4 (Austar Interactive transponder). The bouquet menu remains on this transponder, but seems it now has two loading tables, and, an extra Test Bouquet. Additionally, the Foxtel bouquets previously labelled "FOX" are now "Foxtel" again. The first bouquet table is: (1) TEST, (2) TEST2, (3) OPTUS, (4) AUSTAR. The second bouquet table, requiring several minutes to load if a UEC642 is powered down, is (5) FSWP, (6) FoxtelNSW, (7) FoxtelVIC, (8) FoxtelQLD, (9) FoxtelSA, (10) FoxtelWA. The PIDs for all channels on T11 have been changed; PIDs for TV channels now conform to the "new system."

Channels on this transponder are now in two PATs (channel loading tables): The first PAT is: (1) AITV71, (2) AITV72, (3) FYI - Austar's For Your Information channel (99-CA), (4) aHome (Austar's Services menu Home channel; FTA), (5) aDemo (not in use), (6) GAMES (Austar's promotional TV channel, advertising their games, CA), (7) aOpen (not in use), (8) Ch98 (Austar's instructions for replacing the PACE (model 400) IRDs, CA), (9) AITV73, (10) AITV74 (audio PID 3041 on UEC, music with "Welcome to the games channel"), (11) AITV75, (12) AITV76, (13) AITV77, (14) AITV78, (15) AITV79, (16) AITV80, (17) AITV81, (18) AITV82, (19) AITV83 (audio PID 3131, classical music looped), (20) AITV84 (audio PID 3142 - on UEC 642 is "scary music" with "piracy warning"), (21) AITV85, (22) AITV86 (CA, video PID 3161, audio 3162, PCR 8190 - content unknown). Many of these channels contain data PIDs for the Austar interactive games.

The second PAT loads as: (23) AITV87, (24) AITV88, (25) AITV90, (26) TVG: GUIDES: 19002, (27) OTV: GAMES, (28) OTV: Set Up, (29) OTV: Weather, (30) RD: Radio, (31) OTV: Austar, (32) SPI Dummy 19.

T14/12.438H, 27.800, 3/4 now has two PATs (loading tables). The first contains 26 channels as:

(1) <no name> (no video PID, audio PID not running, 22 data transfer PIDs)

(2) FBOB (currently FTA promotional loop for Foxtel movie preview; some 16:9)

(3) FBOP (currently same as FBOB but out of sequence in the loop). EPG reads: "Foxtel Box Office Preview. Continuous movie previews and trailers showcasing the great range of titles now showing and coming soon to Foxtel Box Office. To order the movie of your choice simply press the Box Office button on your remote control." Those with UEC 742s lacking a "BO" button may wonder about this - perhaps teletext button will be resoftware reconfigured for this function.

(4) Sky(2). This is CA, has same EPG as Sky News.

(5) SKYM (probably Sky News mosaic). There are 8 different images with 8 companion soundtracks. First is normal Sky News service, other 7 are "Sky News Active Test," each being a 1-minute loop. The 6th image is financial news, 7th is weather and the remainder are current news stories. This is FTA although the UEC labels it as CA (on screen display across middle of screen). Note: This is similar to the "problem" UECs had with Mediasat back when Paul Mullen was responsible for it (now Globecast) - they were using Scientific Atlanta hard/software at that time. Paul eliminated the problem; perhaps the NDS equipment has a similar design problem yet to be fixed (non-DVB fully compliant).

(6) CCV (CA; EPG says "digital help.")

(7) iEPG Video Satellite. FTA, 16:9, seems to be an active 'skin (dynamic background graphic) for Foxtel's EPG with music loop. Plays OK on Nokia DVB2000; on UEC video sometimes does not play and when it does, V and A glitch. PowTek (see p. 28, here) plays it fine.

(8) r01, (9) r02, (10) r03, (11) r04, (12) r05, (13) r06, (14) r07, (15) r08, (16) r09, (17) r10, (18) r11, (19) r12, (20) r13, (21) r14, (22) r15, (23) r16, (24) r17, (25) r18, (26) r19. A second PAT then loads: (27) r20, (28) r21, (29) r22, (30) r23, (31) r24, (32) r25-not in use(NIU), (33) r26-NIU, (34) r27-NIU, (35) r28-NIU, (36) r29-NIU, (37) r30 - audio PID 792, not in use, (38) SPI Dummy 17 (no PIDs), (39) "SWDL Satellite (NDS)" - data channel with PMT and two data PIDs (96/0060 hexD and 97/0061 hexD). There is no data flow on 96 but on 97 data flows at 0.204 MBit/s. Conjecture: This might be a download of NDS software for Foxtel UEC720 IRDs.

Note r01 through r24 are the same as the 24 radio channels on Austar (T19/12.638H, 27.800, 3/4).

T19/12.638H, 27.800, 3/4. This transponder also has its channels divided between two PATs (loading tables). The first PAT is: (1) ABC (with subtitles), (2) TWC, (3) EXPO (FTA), (4) Fox8, (5) SBS (has hidden subtitles at PID 1056), (6) CMC, (7) MOV1 (a copy only - not on Foxtel nor Austar), (8) MTV (a copy only), (9) r01, (10) r02, (11) r03, (12) r04, (13) r05, (14) r06, (15) r07, (16) r08, (17) r09, (18) r10, (19)

(14) r06, (15) r07, (16) r08, (17) r09, (18) r10, (19) r11, (20) r12, (21) r13, (22) r14, (23) r15, (24) r16, (25) r17, (26) r18, (27) r19. At this point the second PAT kicks in, as: (28) r20, (29) r21, (30) r22, (31) r23, (32) r24, (33) SPI Dummy 18 (no PID). r01 to r24 are the (CA) radio channels on Austar. The first 12 channels (r01-r12) are also on Foxtel bouquet.

T20/12.688H, 27.800, 3/4. Same as T16 (i.e. loads only one channel - TVSN labelled TEST - and the NIT on both is 12.606(7)V, 27.800, 3/4.

Despite all of the (massive) changes done December 16th, most should have been "invisible" to Foxtel and Austar subscribers - they should only have the original channel packages, not any of the new ones added this date.

18 December: T4/12.447V, 27.800, 3/4. The channel labelled "SPTA1" now has EPG: "Foxtel Games Portal." And, iTV5 also has EPG. "Press i to see this month's games (Moonbase Mayhem, Operation Octopus, Remote Racers, Sumo Tsunami, Space Invaders)."

T14/12.438H, 27.800, 3/4. Channel 4 (SKY (2)) has been relabelled as "Sky News"; CA, has the same EPG as the SKYNews channel on Foxtel and Austar.

19 December: T4/12.447V, 27.800, 3/4. Channel loading is now:

(1) SPA (FTA, 16:9, EPG of Fox Sports, was airing AFL film and has 5 video, 5 audio PIDs).

(2) SPM (FTA, 4:3, screen divided into 4 pictures - possibly to be Sports Mosaic)

(3) SPH (FTA 4:3; screen with two separate images, was running same material as SPA)

(4) SPB (FTA, 16:9, same material as SPA)

(5) SPW (FTA, 16:9, same material as SPA)

(6) GAME (no V nor A PIDs; EPG says "Foxtel Games Portal").

(7) MIND (no V nor A PIDs; EPG says, "Word games, trivia and brainteasers.")

(8) MIN2 (no V nor A PIDs. Same EPG as MIND).

(9) ARCD (no V nor A PIDs. EPG says, "Arcade-style interactive games,")

(10) ARC2 (no V nor A PIDs; EPG is same as ARCD.)

(11) SPI Dummy 16 (no PIDs).

The five game channels have multiple data PIDs, some of which when manually loaded into Nokia DVB2000 as *video* PIDs will reveal graphics being used; e.g: ObdE (3038 decimal), Obe1 (3041 decimal), Obe4 (3044 decimal), Obe6 (3046 decimal). This can also be done with the data PIDs on Austar T11; *a boring way to spend an hour!*

T5/12.487V, 30.000, 2/3. This transponder, from December 6 carrying on an emergency basis WIN and ABC WA FTA, shut down this date.

T14/12.438H, 27.800, 3/4; FBOB switched to CA.

T16/12.518 and T20/12.688H, 27.800, 3/4 which are not a part of the pay-TV load, both stopped airing TVSN on this day. They are now blank screens with a data rate of 6 M/bit/s.

20 December: T4/12.447V, 27.800, 3/4. Sports channels here all went to a static message - "FOXTEL GET IT ON," no audio (on UEC). SPM has 4 x this graphic, SPA has 2 x.

26 December: T4/12.447V, 27.800, 3/4. Graphic added 20 December (above) now full screen including on SPA, SPM, SPB, SPW (all 16:9) and SPH (4:3).

28 December: T3/12.407V, 30.000, 2/3: The seven Sky (Aust) racing TV channels are gone (channel labels blank, no PIDs load). This Optus C1 transponder still has 2 versions of Irdeto, while Aurora Business transponder (B3) currently has 3 versions of Irdeto.

29 December: T4/12.447V, 27.800, 3/4. Sports channels now airing tape of AFL game shot from multiple angles.

(1) SPA (16:9, FTA, multiple V and A PIDs. Camera angle is labelled "Director's Cut.")

(2) SPM (4:3, 4 pictures, airing same video as SPA, SPH's main picture, SPB and SPW.)

(3) SPH (16:9, FTA, two pictures - one small, one large (small same as SPA, large intended for graphics overlays)).

(4) SPB (16:9, FTA, labelled across picture "Best Angle.")

(5) SPW (16:9, FTA, labelled across picture, "Wide Angle.")

T19/12.638H, 27.800, 3/4. Two CA channels labelled MOV1 (V 1071, A 1072) and MTV (V 1081, A1082) no longer have data flow. These two channels were only copies of the genuine Foxtel/Austar (MOV1 on T17/12.558H, MTV on T18/12.598H).

1 January: T4/12.447V, 27.800, 3/4; the SPA channel rebroadcasting Sky News FTA; all other sports channels showing tape of AFL match.

T11/12.278H, 30.000, 3/4. Austar's FYI channel (V 1011, A 1012, PCR 8190) now removed from Austar bouquet (previously loaded as channel 99 on Austar IRDs). However, there is video and audio flowing in CA mode.

T13/12.398H, 27.800, 3/4. CA channel SWP (V1081, A1082, PCR 1081) has EPG removed. On UEC, channel's EPG reads " ? ". Animal Planet, also on T13, added to Austar bouquet as channel 14 (it has been blank since demise of ABC Kids).

T14/12.438H, 27.800, 3/4; channel labelled FBOB is again FTA, playing Foxtel preview loop.

2 January: T4/12.447V, 27.800, 3/4. SPA channel no longer airing Sky News; all SP channels now airing what appears to be NRL game tape from various camera angels.

5 January: T2/12.367V, 30.000, 2/3 (which is cloned on Optus B3) - Globecast has added "Overcomer Radio" at audio PID 1123. This is a Jehovah Witness short-wave broadcasting station headquartered in South Carolina, USA.

7 January: T1/12.303V now has digital data stream; 27.800, 3/4, NA beam. No PAT or NIT

...

Optus B3/152E:

9 December: T5/12.525V, 30.000, 2/3 (and clone of 12.720V). TV: US religious service 3ABN added (FTA). Radio: Bangkok Radio 94FM added (FTA).

11 December: T3/12.407V, 30.000, 2/3 (Aurora business transponder). 3 new CA radio channels added. Radio channels now load as:

(1) Retail Radio 1, SuperCheap Auto Radio (CA), (2) Sport 927, SMA (CA), (3) Retail Radio 2, Kmart in store Australia (CA), (4) Retail radio 3, Kmart Garden Centre Radio (CA), (5) Retail Radio 4, Kmart New Zealand radio (CA), (6) Austral Asia (CA), (10) QTAB (normal Aurora card plays). Note: As #5 is obviously intended for NZ, this beam is likely to remain NANZ.

13 December: T12/centre frequency 12.503H - appears to have several high power SCPCs operating.

14 December: T11/12.438H, 30.000, 3/4. The channel labelled as BVN (Dutch-Flemish television) is a blank screen, but the same service continues to run on T7/12.657V and on Optus C1.

16 December: T5/12.525V, 30.000, 2/3 (and clone T8/12.720V) TV channel 1 relabelled as "SIGARAM TAMIL TV" but appears to be same service as previously. Of interest, it airs advertising for small businesses in Sydney, Melbourne - mainly Indian immigrant businesses.

17 December: T11/12.438H, 30.000, 3/4. Spectrum analyser view suggests it is suffering from some type of interference. T12/12.503H still appears to

have multiple high power SCPC signals. Note: Previous reports suggested B3 has a weakness - when signals are overly strong at input, images pop up in other non-intended transponders.

18 December: T5/12.525V, 30.000, 2/3 (and clone on 12.720V). TV: RTV21 has been replaced (temporarily) by EWTN (world Catholic television, also on PAS-8 C-band).

19 December: T11/12.438H, 30.000, 3/4 by Globecast has been shut down and the interference visible previously (T11) is also gone.

T12/12.503H centre frequency. The previously noted strong SCPC signals (or perhaps images from T11) are now (also) gone.

20 December: T3/12.407V, 30.000, 2/3. TV channel 14 is now blank (no data). It was previously "SKY TEMP" and was CA.

22 December: T5/12.525V, 30.000, 2/3 (and clone on T8/12.720V) has added the "AL MANAR" channel. T4/12.470 centre frequency. A weak digital transmission with a centre frequency of approximately 12.482 significantly increased its power; unknown service.

23 December: T5/12.525V, 30.000, 2/3 (plus clone 12.720V), Al Manar has dropped all video and audio modulation; no PIDs either. The channel PIDs still load (V 1760, A 1720), however. This channel, like TGN, has a strange "85 code" (Al Manar's code 85 entry is 1731 decimal).

-B3 update continues p. 29

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SatFACTS Pacific/Asian MPEG-2 Digital Watch: 16 January 2004

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym
Thom3/78.5	SkyChAust	3695/1455H	up to 3	3/4	5(000)
	Indivision	3685/1465H	1	3/4	6(830)
	Korean Central	3665/1485H	1	2/3	3(367)
	TARBS ME mux	3640/1510H	12TV, 12 radio	2/3	28(066)
	Ch Nepal	3626/1524V	1	3/4	15(556)
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26(667)
	SE asia Mux	3569/1581H	2+ TV	3/4	12(500)
	RR Sat mux	3551/1600H	8TV, 10 radio	3/4	13(333)
	JAIN TV	3538/1612V	1TV	3/4	3(300)
	PTV1 +	3521/1629V	1TV, 1 radio	3/4	3(333)
InSat 2E/83	TARBS	3520/1630H	12TV, 12 radio	3/4	28(066)
	TVK Cambodia	3448/1702H	1TV	1/2	6(312)
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26(667)
	KCTV/Korea	3424/1726H	1TV	3/4	3(366)
	Thai Global	3425/1725V	up to 77	2/3	27(500)
	ETV mux	4005/1145V	6+ TV	3/4	27(000)
	Hyd Dig 2E	3910/1240V	1	3/4	5(000)
	Kairali TV	3699/1451V	1	3/4	3(184)
	Indian mux	3643/1507V	3	3/4	19(531)
	ETV Mux#2	3485/1665V	4+TV	3/4	27(000)
NSS6/95E	Sky Bangla	3430/1720V	1TV	3/4	6(000)
	Test MUX	12 688V	? + TV	3/4	28(066)
	Test Free-XTV	12 631V	1TV	2/3	2(441)
	Test MUX	12 593V	8TV + radio	3/4	21(000)
	Shandong TV	4070/1080H	1TV	3/4	6(811)
	Euro Bouq	4000/1150H	6TV, 21r	3/4	28(125)
	Richum TV	3946/1204H	1TV + radio	3/4	4(420)
	Reuters News	3905/1245H	1TV	3/4	4(000)
	WorldNet	3880/1270H	4+28radio	1/2	20(400)
	Hubel/HBT	3854/1296H	1	3/4	4(418)
As2/100.5E	Hunan/SRT	3847/1303H	1	3/4	4(418)
	Guan/GDT	3840/1310H	1	3/4	4(418)
	In. Mongolia	3828/1322H	2	3/4	8(397)
	APTN Asia	3799/1351H	1	3/4	5(632)
	Reuters/Sing	3775/1375H	1	3/4	5(631)
	Liaonin/Svc2	3734/1416H	1	3/4	4(418)
	Jiangxi/JXT	3727/1423H	1	3/4	4(418)
	Fujian/SET	3720/1430H	1	3/4	4(418)
	Qinghai/TV	3713/1437H	1	3/4	4(418)
	Henan/Main	3706/1444H	1	3/4	4(418)
As2/100.5E	Egypt/Nilesat	3640/1510H	7+ radio	3/4	27(850)
	Macau MUX	4148/1002V	5TV	3/4	11(850)
	Freeda	4086/1064V	1	3/4	5(632)
	Dubai MUX	4020/11430V	4+ radio	3/4	27(500)
	Jilin Sat TV	3875 1275V	1	3/4	4(418)
	Shanghai BN	3846/1304V	1	3/4	4(800)
	HeiLongJian	3834/1316V	1	3/4	4(418)
	JSTV	3827/1323V	1	3/4	4(418)
	Anhui TV	3820/1330V	1	3/4	4(418)
	Shaanxi/QQ	3813/1337V	1	3/4	4(418)
As3S/105.5E	Guan/GXTV	3806/1344V	1	3/4	4(418)
	Fashion TV	3795/1355V	1	3/4	2(626)
	3-ch miniMUX	3752/1398V	up to 3	3/4	5(640)
	Saudi TV1	3660/1490V	7+tests	3/4	27(500)
	Telstra I-Net	12 596V	no TV	5/6	30(000)
	RR Mux	3669/1481V	up to 5 TV	3/4	13(333)
	Zee bouquet	3700/1450V	10TV	3/4	27(500)
	Ch News Asia	3706/1444H	1TV (+)	3/4	6(000)
	Ariang TV	3755/1395V	1	7/8	4(418)
	Now TV +	3760/1390H	up to 8TV	7/8	26(000)
Cak1/107.5	Star TV	3780/1370V	7(+)-TV	3/4	28(100)
	Star TV	3840/1310H	7(+)-TV	7/8	26(850)
	Star TV	3860/1290V	5(+)-TV	3/4	27(500)
	Star TV	3880/1270H	20(+)-TV	7/8	26(850)
	Star TV	3920/1230H	4+ 1V	7/8	26(850)
	Star TV	3940/1210V	6(+)-TV	7/8	26(850)
	CNNI	3960/1190H	8(+)-TV	3/4	27(500)
	StarTV	3980/1170V	6+TV	3/4	28(100)
	Star TV	4000/1150H	8(+)-TV	7/8	26(850)
	Sahara digital	4020/1130V	8TV	3/4	27(250)
T'Kom/108E	Pakistan TV	4091/1059V	4TV, 1 radio	3/4	13(333)
	Sun TV	4095/1055H	1	3/4	5(554)
	1VB Mux	4010/1040H	3	3/4	11(230)
	CCTV bqt	4129/1021H	4(+)-TV	3/4	13(240)
	Zee Bqt #2	4140/1010V	8(+)-TV	3/4	27(500)
	Indivision (S-band)	2.535, 2.565, 2.595, 2.625, 2.655	33(+)-TV	7/8	20(000)
	IndoBqt	3460/1690H	up to 6	3/4	28(000)
	TPI	4185/965V	1	3/4	6(700)
	TVE Asia-Africa	4160/990H	1	3/4	5(632)
	Anteve	4144/1006V	1	3/4	6(510)
C2M/113E	Indo Mux	4080/1070H	5+ TV	7/8	28(125)
	Indostar	4074/1076V	1	3/4	6(500)
	SCTV	4048/1102V	1	3/4	6(618)
	Indonesian Mux	4000/1250H	6+ TV	3/4	26(085)
	Satelindo	3935/1215H	1	3/4	6(700)
	Mal TV	3926/1224H	1	3/4	4(208)
	Indo MUX	3880/1270H	3+ TV	7/8	28(121)

Receivers and Errata

CA (#1, 3); FTA audio #2 (dm)
 Tests June 2003; not permanent
 Global footprint, changes 02/03
 CA + 2 FTA(AITV, IRB3)
 New 03/03; FTA
 Thai + Indian services; FTA
 MRTV3, MRTV (DM)
 3TV, 5radio currently in use
 PIDs 4132/4133
 frequency change
 Feeds to TARBS Australia and PAS-8
 FTA
 3FTA: TV5, VTV4, ATN Bangla
 Not 24 hour
 FTA (reaches SE Australia)
 Several ETV now here; wide beam
 SCPC, OK E. Aust wide beam
 SCPC, OK E. Aust wide beam
 corrections 12/02
 Several new ETV here; Asia beam
 New - November 2002
 PowerVu; may be NE Asia beam; tests
 Possibly India-only beam
 Testing - many European stations, Australia beam
 New - October 2002
 FTA TV + radio
 New April 2003
 Was 3923H, sometimes FTA
 FTA; multiple audio services
 FTA SCPC, teletext, 2 radio
 FTA SCPC, teletext
 FTA SCPC, radio APID 81
 FTA: #1 Mongolian, #2 Mandarin
 Sometimes FTA; also 3895Vt
 FTA & CA
 FTA SCPC, radio APID 256
 FTA SCPC, teletext, radio APID 81
 FTA SCPC, + radio APID 80
 FTA SCPC, + 2radio (APID 80)
 FTA SCPC, + radio
 Thru TARBS Aust, occ. FTA
 5 chs TV, FTA, some tests
 FTA SCPC feeds
 FTA, sometimes includes sport
 FTA SCPC, + radio
 V1110, A1211 + 2 radio; FTA Jan 2003
 FTA SCPC
 FTA SCPC, + radio
 FTA SCPC + radio
 FTA SCPC, radio APID 81
 FTA SCPC, radio APID 257
 FTA as of May 1, 2003
 Sun-TV, Surya TV, KTV (FTA)
 FTA MCPC, Yemen, MBC EUROsport tests
 Signal useful for dish testing - no TV
 Bluekiss adult here; CA
 Mediaguard + Conax CA; 2 occ FTA
 New September 2003; English + V1160, A1120
 FTA SCPC; New PIDs V3601, A3606 June 2003
 CA + NOW, B'berg, Indus Music, MTA FTA
 NDS CA (Pace DVS211, Zenith)
 NDS CA (Pace DVS211, Zenith)
 NDS CA (Pace DVS211, Zenith)
 NDS CA (Pace DV211, Zenith) in transition 06-2003
 Star Sports Asia (+), FTA N13C; V512, A640 English
 NDS CA as above; may NOT be operational
 PowVu CA; new SR Apr 29
 NDS CA; Star News India FTA VPID 514, APID 648
 NDS CA w/ 4(Chinese) FTA
 New Sr September
 new Sr, channels, Nov 2003
 "History Channel" testing SCPC
 MATV Chinese movies FTA; + CA
 moved from 4115
 Mediaguard (SECA) CA
 NDS CA using RCA/Thomson,
 Pace IRDs; 2.535 has 2 FTA
 also 3586H/17.500, 3496H/19.615
 FTA SCPC; NT/NC only
 New August 2003
 change from 4055V; FTA SCPC
 Global TV - erratic new FEC 06/03
 FTA (new 06-03); V2201, A2202
 FTA SCPC, NT, New Caledonia only
 undatable platform - not always there
 test card - only - reported
 FTA, may not be active full time
 FTA; Sr change 01/03; erratic

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
	GlobalMUX	3760/1390H	up to 11 TV?	7/8	28(121)
	Brunel/Sing	3733/1417H	1TV	3/4	6(000)
	TBN/Trinity	3727/1423H	1 TV	3/4	3(000)
	RCTI	3473/1677H	2	3/4	8(000)
As4/122E	STV mux	388101270H	8 or more	3/4	26(850)
Ic3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(000)
	Asian bqt	3960/1190V	up to 8	7/8	30(000)
Ic2A 154	Cnet	3880/1270V	up to 12	3/4	30(000)
	BYU tests	3915/1245V	2	3/4	3(703)
Meas2	New Mux	12.532H	17	3/4	41(500)
	Astro Mux	11.602H	up to 17TV	3/4	41(500)
	VTM MUX	11.522V	3 TV	3/4	9(766)
B3/152	Optus tests	12.407V	4+ TV, 4+ radio	2/3	30(000)
	Globecast tests	12.525V	8+ TV, radio	2/3	30(000)
	Globecast tests	12.657V	5+ TV	2/3	30(000)
	Globecast tests	12.720V	8+TV, radio	2/3	30(000)
CI/156	Globecast	12.367V/T2	13TV, 12radio	2/3	30(000)
	Aurora	12.407V/T3	13TV, 12 radio	2/3	30(000)
	Aurora	12.527V/T6	11TV, 19 radio	3/4	30(000)
	Aurora	12.567/T7	2+ radio (only)	2/3	30(000)
	(tests)	12.606V/T8	TVSN FTA	3/4	27(800)
	Aurora	12.720V/T10	10TV, 19 radio	3/4	30(000)
	Austar	12.278H/T11	02-12 - changes	3/4	30(000)
	Optus/Foxtel	12.358H/T12	11TV	3/4	27(800)
	Optus/Foxtel	12.398H/T13	10 TV	3/4	27(800)
	Austar/Foxit	12.438H/T14	one info channel/FTA	3/4	27(800)
	Optus/Foxtel	12.478H/T15	9 TV	3/4	27(800)
	Austar/Foxit	12.518H/T16	TVSN only	3/4	27(800)
	Austar/Foxit	12.558H/T17	11TV, 24 radio	3/4	27(800)
	Austar/Foxit	12.598H/T18	11TV	3/4	27(800)
	Optus/Foxtel	12.638H/T19	8TV, 24 radio	3/4	27(800)
	(tests)	12.688H/T20	1TV	3/4	29(473)
B1/160	ABC NT fd	12.258V	1TV, 3 radio	3/4	5(026)
	Occ. feeds	12.380H	1 TV - *	3/4	6(111)
	Occ. feeds	12.384V	1 TV - *	3/4	6(111)
	Net 7 service	12.397H	1	3/4	7(200)
	Net Ten	12.353H	1TV + 1 radio	3/4	5(100)
	Imparja mx	12.379H	2TV + 8 radio	3/4	5(424)
	7 digital feeds	12.397H	1TV	3/4	7(200)
	Feeds to NZ	12.411V	1 TV	3/4	6(111)
	SBS Mux	12.420H	3+ TV, 2+ radio	5/6	12(600)
	TVNZ DTH	12.456V	5+TV	3/4	22(500)
	Nine Net	12.512H	1 TV typ.	3/4	5(632)
	Sky NZ	12.519/546V	7TV/TV	3/4	22(500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(500)
	Sky NZ	12.644/671V	9TV	3/4	22(500)
	ABC HDTV	12.603H	5TV	7/8	14(300)
	Sky NZ	12.707/733V	8+TV	3/4	22(500)
	Mix 106.3	12.574H	1 radio + data	3/4	1(851)
P8/166	TARBS3	12.326H	13TV + radio	3/4	28(066)
	TARBS	12.526H	13TV + radio	3/4	28(066)
	TARBS2	12.606H	13TV + radio	3/4	28(066)
	TARBS5	12.646H	testing	3/4	28(066)
	TARBS4	12.726H	13TV + radio	3/4	28(066)
	JEDI/TVB	12.686H	11+ TV	3/4	28(126)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(125)
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(470)
	FOX Mux	4040/1110V	up to 5TV	7/8	26(470)
	NET +	4121/1029V	1 TV	3/4	4(774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(470)
	Discovery	3980/1170H	8 typ.	3/4	27(690)
	CalBqt/Pas8	3940/1210H	up to 3+ FTA	7/8	27(690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(500)
	FilipinoMUX	3880/1270V	up to 8TV+radio	5/6	28(694)
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(000)
	CCTV Mux	3829/1321H	up to 4 + 1 radio	3/4	13(240)
	TVBS-N	3836/1314V	1FTA, 4+ CA	3/4	22(000)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(000)
	Discovery Asia	3764/1386V	Up to 6 TV	3/4	19(850)
	MTV	3740/1410H	8	2/3	27(500)
	ABS-CBN APT	3712/1438V	1	3/4	3(712)
P2/169E	Off-shore rigs	12.281V	2+ TV, radio	2/3	27(500)
	WA PowVu	12.637(5)V	4TV, 8 radio	1/2	18(500)
	NBN-TV	4126/1024V	1TV	3/4	3(075)
	TARBS	4090V/1060V	9TV + radio	3/4	21(000)
	Feeds	4037/1113H	1+ TV	2/3	6(620)
	Feeds	4027/1123H	1+TV	2/3	6(620)
	Feeds	4023/1127V	1 +TV	3/4	13(328)
	Feeds	3966/1184V	1	2/3	6(620)
	Feeds	3957/1193V	1	2/3	6(620)
	Feeds	3929/1221V	1	3/4	10(850)
	Feeds	3912/1238V	1	2/3	6(620)
	Feeds	3898/1252V	1	2/3	12(000)
	Middle East	3836/1314V	4 typ	3/4	13(331)
	Feeds	3803/1347V	1	3/4	6(000)
	PAS/BBC mux	3744/1406V	3	3/4	21(500)

Receivers and Errata

test cards (11), new Srt/FEC 01-03
 FTA share time; Brunei 23 hrs, Sing 1 hr
 New PIDs 10-03; reload
 FTA SCPC; Australia, New Caledonia, some English
 First TV mux to appear this new bird; erratic service
 PowerVu, some FTA (Ch. 1 & 3)
 CA & FTA NTSC: Japan, Taiwan
 Cnet (Taiwan) tests; not full time
 Erratic service, very strong NZ and Australia
 New Sept 2002; unknown source
 Aust East beam - 3 FTA + 14 CA
 WA only? Skew path, intended Asia
 now differs from 12.407 C1; tune ch FTA
 C1 12.367V services moving here Nov-Dec 2003
 part of Globecast expansion underway
 part of Globecast expansion underway
 Content chs moving to B3; "watch this space!"
 Aust, NZ 90 cm
 Australia NA only (leakage to Norfolk, New Cal)
 Aust, NZ 90 cm
 Tests; unique NIT to this TR
 Australia NA only (leakage to Norfolk, New Cal)
 02-12/late-NIT returned, loads same as bqt
 CA, subscriptions available Australia, Norfolk
 CA, subscriptions available Australia, Norfolk
 02-12: probable temporary info ch (p. 22)
 CA, subscriptions available Australia, Norfolk
 02-12: probable temporary loading
 "Home"CA, subscription available Australia, Norfolk
 CA, subscription available Australia, Norfolk
 Tests (CA)
 Tests (CI/20); unique NIT; see detail p. 28
 Sve off Dec 1-4; now back (5th) Future unknown
 * - plus 12.451H, 12.460H
 * - plus 12.293V, 12.402V, 12.411V
 Full schedule less commercials - links
 Possibly feed to Tasmania?
 PIDs vary, also try 12.360, 12.370
 occ. digital feeds; typ fla
 Often NTSC; USA-Australia-NZ
 Also 12.420H same params; SBS HDTV + w-s
 FTA 4 channels (TVNZ x 4); +Maori here
 testing digital feeds; Srt may vary
 NDS CA, subscription available NZ
 NDS CA, subscription available NZ
 NDS CA, subscription available NZ
 also 12.626, 643, 670, 688, & 706H
 NDS CA, subscriptions available NZ
 Radio SCPC is "cover" for high speed data
 TPG/Eurodec MDS CA, occ. FTA
 TPG/Eurodec MDS CA, 1 radio FTA
 TPG/Eurodec MDS CA
 TPG/Eurodec MDS CA, 2 TV FTA
 TPG/Eurodec MDS CA
 June 2002-Irdeto-2 CA
 Dateline west, east PAS2, 3901
 PowVu CA
 PowVu CA & FTA; subscription available
 was PAS-2, previously 3992Vt
 NET25 + FTA, new PIDs April; reload
 PowVu CA; ch 11 DCP-CCP bootload; new FEC
 PowVu/CA (some audio FTA)
 PowVu CA & FTA (EWIN +)
 NDS CA (6 channels), one testcard FTA
 Myx FTA V1960, A1920 + radio FTA
 Mixed FTA & CA; Videoland WMovie, STC
 PowVu FTA, replaces PAS-2 svc
 Difficult because of CCTV cross pole
 was As2; PowVu CA
 PowerVu
 PowerVu; Asian MUX; new parameters Nov '03
 # 8 MTV China FTA V289, A290; rest CA
 24/7 English track 2 news; V4096, A4099 11-03
 PowVu CA, WIN, ABC NT
 PowVu CA, WA only - D9234
 3m up (NZ), 1.8m up Australia
 Occ FTA (Chile +); BIG power reduction Nov.
 Sporting feeds (occasional)
 Sporting feeds from USA (occasional)
 feeds to (USA) pay-TV
 PowVu (FTA) occ feeds
 PowVu (FTA) occ. feeds
 PowVu (FTA) occ sport feeds
 PowVu(FTA) occ. feeds
 PowVu (FTA) occ. feeds
 Irdeto 2 CA - subscriptions avail; Strong Tech
 PowVu (FTA) occ sport feeds
 BBC, test card FTA, others nominally CA



SATWORLD

NOKIA

eM

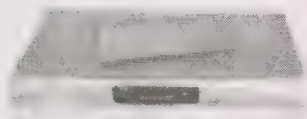
DREAMBOX

TOPFIELD

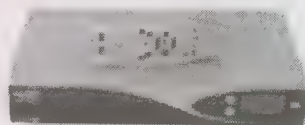
HUMAX



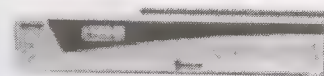
Humax IR ACE S



eMTech 200



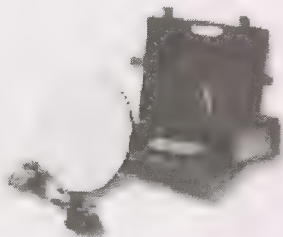
Dreambox 7000s



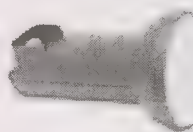
Strong 4800 II



Topfield 5000 PVR



Portable Dish



Grundig LNB



Gutter Mounts

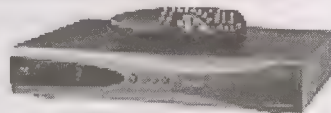
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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	Adventists.tv	4040/1010H	1	2/3	5(,900)
	Feeds	3868/1182H	1	2/3	6(,620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(,620)/7(,498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(,800)
	HK bouquet	3850/1300H	up to 8	2/3	24(,900)
	occ feeds	3776/1374H	1 typ	3/4	5(,560)
	Korean Bgt	3771/1379H	1	3/4	9(,041)
1804/176E	iPSTAR	12.619H	1	2/3	25(,220)
	Tests-NZ beam	12.646H	1	3/4	22(,418)
	RFO Poly	4027/1123R	1TV	3/4	4(,566)
1701/180E	TNTV	11.060&11.514	9	3/4	30(,000)
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(,000)
	TVNZ	4195/955RHC	1	3/4	5(,632)
	TVNZ/BBC	4186/964RHC	1	3/4	5(,632)
	TVNZ	4178/972RHC	1	3/4	5(,632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(,680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(,632)
	TVNZ/feeds	4161/989RHC	1	3/4	5(,632)
	RFO-Canal+	4086/1064L	4TV, radio	5/6	12(,041))
	TVNZ/feeds	4052/1098RHC	1	3/4	5(,632)
	TVNZ feeds	4044/1106R	1	3/4	5(,632)
	NZ Prime TV	4024/1126L	1	2/3	6(,876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(,447)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(,000)
	Ioarana	3772/1378L	1	3/4	4(,566)
	TVNZ	3846/1304R	1	3/4	5(,632)
	NBA (Barker) Ch	3803/1347R	1	3/4	6(,111)
	10 Australia	3769/1381R	4	7/8	20(,000)
	USA feeds	3749/1401R	4?	?	26(,400)

Receivers and Errata

New December 2003: 24/7 "Hope Chs."
FTA (occ sport); also try 3863.Sr6.100
FTA-typ NTSC-occ sport, live Shuttle
PowVu CA + FTA (BBC gone)
was 4148Vt, some FTA
occ feeds, typ FTA; also Sr 5 600
Korean MUX, reload 02/03
Tests, late May start; also 12.646H
Testing possible data links, June 2003
SE spot beam; was 4027LHC
east spot; 10TV + r each, vertical pol.
1+ FTA, MediaGd "2"; + 10.975 weaker
DMV/NTL early vers., occ feeds, typ ca
DMV/NTL early vers., occ feeds, typ ca
DMV/NTL early vers., occ feeds, typ ca
DTS Direct to Sailors; audio previously FTA - no more
DMV/NTL early vers., occ feeds, typ ca
DMV/NTL early vers., occ feeds, typ ca
east hemi 20.5 dBw +, new Sr
DMV/NTL early vers., occ feeds, typ ca
SCPC, mixed CA and FTA feeds
PowVu CA, Auckland net feeds
CA, Leitch encoded
New PIDs Dec 03 very strong NZ, Pacific
FTA SCPC; East Hemi Beam-Tahiti
SCPC, mixed CA & FTA, feeds
NBA feeds - probably CA - new Nov 2003
PowVu CA & TBN-JCTV FTA
16-QAM (not MPEG-2 compatible)

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

Aston Simba 201. Embedded SECA (Zee, Canal +); review SF#97. MediaStar 61-2-9618-5777.
AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM P/L, 61-2-9939-4377.
AV-COMM R3100(A). FTA, good sensitivity, ease of use exc (review SF May 2002). See above contact.
Benjamin DB6600-Cl. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Coship 3188C. Review SF#107. Blind search FTA rcvr. Presently available from Satlink NZ. www.satlinknz.co.nz. "In our humble OPINION, " buy with caution.
eMTECH eM-100B (FTA), eM-200B (FTA + Ch2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)
Humax F1-Cl. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).
Humax ICR1 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, SF#76.
Humax ICR1 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available.
Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)
Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
Hyundai HSS800Cl. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#83/
INNOVA IDS3088. Review SF#111. Blind search FTA receiver. High quality Irdeto; no known source in Pacific but apparently available in Singapore.
ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.
MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. 61-2-9618-5777
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.
MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.
Nokia 9200/9500. When equipped with proper software, does Aurora, pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. [SatWorld 61-3-9773-9270 \(www.satworld.com.au\)](http://www.satworld.com.au)
Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replacing; Sept 18 (2003) "drop-dead" day; all were to have been "turned off" on that date (in fact, those with V1.13 CAMs may still be working).
Pace DVR500. Original DGT400 modified for NBC (PAS-2)/RSA use, with CAM equivalent to DGT400 but more reliable.
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.
Panasat 520/630/636. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370. No longer work with Austar/Foxtel.
Panasonic TU-DS10. FTA + Irdeto CA; one of 2 Irdeto approved by Optus for Aurora, but never available in Australia.
Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH (below)- 222; terminated
Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review SF#51. SATECH 61-3-9553-3399.
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). For service only - call Scientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).
PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@adigitalife.com
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7481, Telsat 64-6-356-2749)
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above).
SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSI at tim@dmisusa.com.
SATWORK ST3688. Blind search, 3000 ch memory, multi-format RF modulator; improved version 3818. Review SF#113; available DMSI (above).
Scientific Atlanta D9223, D9225; Orig. PowerVu, superseded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-6281-4481, John Martin
Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#84. Strong Technologies 61-3-8795-7990.
Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, Aurora. Strong Technologies 61-3-8795-7990.
Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, Strong Technologies (above); review SF#103.
Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84); Strong Technologies, # above.
UEC Atlas/Titan. New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6381 3636.
UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.
UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.
Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447
Xanadu. DVB compliant special-priced receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)
Accessories:
Aurora smart cards. MYCRYPT (Irdeto V2) cards now available (Oct. 2003). Sciteq 61-8-9409-6677.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

WITH THE OBSERVERS

AT PRESS DEADLINE

Ten Tasmania B1 12.554H, Sr 5.100, 3/4 up and running including 16:9 widescreen. Hallmark (PAS-8, 3860H, Sr 28.000, 5/6) replacement, Videoland WMovie, with recent English language movies and TV specials (FTA but with Cantonese captioning and many commercials); guide at http://www.videoland.com.tw/5default_e.asp.

Agila 2/146E: "On 12.500V, Sr 1.627, 1/2, there are 14 audio channels (not radio) tagged A-Channel 01 through A-Channel 14." (AZaparra, WA).

AsiaSat 2/ 100.5E: "PTV feeds, occasional, 3753V, Sr 6.111, 3/4." (KT)

AsiaSat 3/105.5E: "Pakistan TV currently has four separate services in their MCPC (4091V, Sr 13.333, 3/4) with plans to expand this to 8 programme channels during 2004." (WP, HK) "3669V (Sr 13.333, 3/4), presently carrying Bluekiss adult programming, scheduled to add up to 3 new English language 'lifestyle' channels during January - FTA." (UL) "PIDs for Blue Kiss and Blue Kiss Plus on 3669V are V49/A51, V65/A67." (The Cat)

AsiaSat 4/122E: "STV Business Network (back) here (again), 3880H, Sr 26.500, 3/4 FTA." (KT) "CBN (USA) testing 3880H; Vpid 530, APID 563." (George)

ChinaSat 20/103E: Editor's note: This is a new C-band satellite "squeezed" in between As2 and As3S. That it can operate here without either causing interference to, or accepting interference from, the AsiaSat birds is questionable. "Test carriers on 3900, 3940, 4100 and 4140H." (Sailor, Taiwan)

I701/180E: "USA WorldNet service (3886R, Sr 25.000, 3/4) hiccuped in mid-December and previous PID entries refused to work. V1160, A1120 plus V1860, A1820 restarted for me but all is still not well. An Email from WorldNet advised: 'For those without SA receivers (where Wn is virtual channel 90), IOR (180E) Video PID 1460, Audio PID Ch 1 1420, Audio PID Ch 2, 1422. For AsiaSat 2, Video PID is 2060, Audio PID Ch 1 is 2020, Audio PID Ch 2 is 2222. The WorldNet program schedules can be found at <http://ibb7-2.ibb.gov/tvschedule/> and once here select between IOR Network (from 180E) or AsiaSat 2 network (100.5E)." (Hans Versluys, Triangle TV, Auckland)

IS804/176E: "12.681, NZ beam, mixed Singapore uplinked NTSC Taiwan NTSC services; Sr 15.000, 3/4." (CS, NZ)

MeaSat 2/148E: "11.523V, Sr 9.762, 3/4 VTV5 test card has been added to bouquet (V 1050, A1060, PCR 1050, SID 1000, PMT 1010)." (AZaparra, WA)

NSS6/95E: "New Skies promo 11.634H, supposedly China beam, Sr now 26.986, 2/3. Also very strong data signal 10.975H, Sr 2.500, 1/2." (AZaparra, WA)

Optus B1/160E: "Central 7 and attached audios now gone from 12.354H." (David) "Maori TV promotion now running within TVNZ MUX (12.456V, Sr 22.500, 3/4) - Rugby Channel closed down December 20th and a special TVNZ



MAORI television - fulfilling a New Zealand government promise, had a "soft launch" January 5 on TVNZ's satellite package (B1, 12.456Vt).

Christmas Channel service ran from 20th to 5th of January." (SJ, NZ) "ABC NT plus attached radio services now permanently gone from 12.260V; end of a NZ viewing era on small dishes." (Perry T) "SCB test card (16:9), 12.353H, Sr 5.100, 3/4 turns put to be Network Ten possibly feeding to Tasmania?" (B. Richards)

Optus B3/152E: See changes starting p. 21. "Sky Racing previously on C1 is now only available here (12.407V, CA)." (PM, Vic)

Optus C1/156E: See changes starting p. 19.

PanAmSat PAS2/169E: "The Hope Channel, FTA in English, 4041H, Sr 5.900, 2/3." (B. Richards)

PanAmSat PAS8/166.5E: "Changes in some audio tracks 3860H (Taiwan Bouquet); remain FTA." (Arnold, NT) "Unknown 3 channel service, CA; 3950V, Sr 10.125, 3/4." (B. Richards) "Good-bye to Hallmark Channel - replaced with similar format 'Videoland WMovie' (3860H, Sr 28.000, 5/6 - VPID 430, APID431) although commercial content percentage significantly up; FTA." (George)

Soapbox: "MediaStar DC-8 SP embedded allcam requires software upgrade before the Bluekiss and Bluekiss+ 24/7 hard-core programming (AsiaSat 3S, 3669V) will play using Viaccess 2.5 cards." (JK, NSW) "I804 Taiwanese service, calling itself Best TV, is Auckland based and advertising in Chinese newspapers seeking installers and resellers." (CS, NZ) Input to NZ government concerning future plans for adaptation of some form of digital TV for country - before February 20 to

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for October15th issue: October 3 by mail or 5PM NZT October 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

PowTek's Blind Search IRD - early user report

A fourth "serious entry" into the blind search race is now appearing in user hands throughout Australia. Jason Racic (www.aDigitalLife.com; in Queensland - see SF#112, p. 18) is now shipping the PowTek version and some users report.

"It will automatically find and load all the TV and radio channels on the pay-TV transponders on Optus C1 (note: This is not a CI/CAM receiver - it is FTA only) whereas a DVB2000 Nokia has to be manually loaded because (presently) several transponders have pairs of PATs, while the UEC 642 initially does not load both tables during a tune and rescan but does manage to locate the second (extra) table(s) a few minutes after tune and rescan, when the extra channels 'magically appear.' Coincidentally, this also happens with UEC when you power on the IRD, with the Bouquet Menu. Possibly there are two loading tables for bouquets as the Foxtel Bouquet would seem to be on a second table.

"The PowTek does not duplicate channels - a rescan finds only new channels.

"It will play some channels which the UEC 642 has difficulties with - such as the new Foxtel "iEPG Video Satellite Channel."

"The sensitivity is at least as good as the eMTech EM200. It loads high M/S services such as Measat 1 (11.602H) with 41.500 and 3/4.

"Problems? It will not load Imparja's PIDs (on Optus B1 feed channel). And on the ABC HDTV B1 transponders, the PowTek loads and plays these fine but it is difficult to leave these bouquets - necessary to switch off to another satellite and back (switching to another B1 transponder does not work)." Editor's note: The PowTek RCU includes a "pause" button as did the original Hyundai HSS100C.

digital@med.govt.nz or directly to Karl Simpson, Senior Policy Analyst, Minister of Economic Development, 33 Bowen Street, PO Box 1473, Wellington (04-462 4211 or Email: karl.simpson@med.govt.nz). (Charles) "This response to Email query concerning TARBS plans for NZ: 'There are currently plans and activities being undertaken to resume language services to New Zealand in the near future. However,

I am not certain of the timing for this. We will keep you on file and will get in touch once we have more specific developments to share.' (signed Renee Kisoglous, international.sales@tarbs.com). (Paul Burton, NZ) "Correcting a misapprehension concerning TVOne and TV2 within Sky NZ's Videoguard MUX. They are on 12.671V (Sr 22.500, 3/4) and have from day-one start-up been FTA. However, when doing a scan, a

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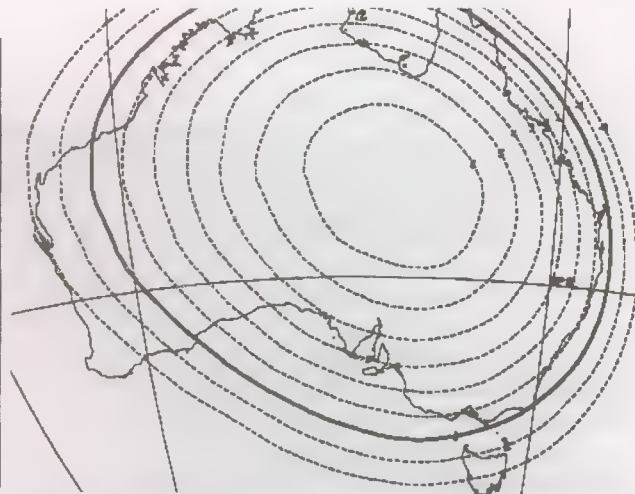
sizeable number of receivers refuse to display them as FTA because of the encryption data stream present. The Auckland based commercials run FTA here, while the Wellington and Christchurch commercials run in the two separate TVNZ created versions on 12.456V." (Craig Sutton) Seven and Ten networks (Australia) are still refusing to pay Foxtel the \$5m a year required to be brought into the Foxtel satellite package. With the expansion of C1 transponders, Nine Network (a co-owner of Foxtel), ABC and SBS will be permanent occupants of channel space leaving Seven and Ten to work out how they will compete for viewers who do not find their channels on the Foxtel remote control." (KG, Sydney)

B3 update - continued from p. 22

24 December: T1/12.282V. This previous weak looks-like MCPC did a small power increase today.

T8/12.720V, 30.000, 2/3. This was Globecast's clone of T5. It either shut down or switched to a different footprint on this date.

5 January: T7/12.657V, 30.000, 2/3 which is a clone of Globecast T2 on Optus C1, has "Overcomer Radio" added (see 5 January, C1 update previous).



AUSTRALIAN coverage (60-80cm dishes required) for proposed Impact TV 1804 service (176E). For NZ coverage on separate spot beam, see SF#112, p. 29 (announcement details p.2, here)

T8/12.720V, 30.000, 2/3. This was Globecast's clone of T5. It either shut down or switched to a different footprint on this date.

6 January: T5/12.525V, 30.000, 2.3. Globecast has removed EWTN (PIDs remain, no data flow).

			<p>Prompt delivery - bonus material! AV-COMM Pty Ltd. email cgarry@avcomm.com.au or telephone (02) 9939-4377</p>
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Satellite Receiver with CI slots & 22 hours recording

Package Price with Irdeto 2.09 CI cam **\$699.00 inc GST.**

eM Tech eM320PVR



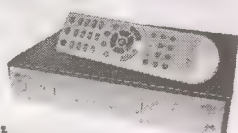
Satellite Receiver with Dual Tuner, firewire, and 44 hours recording

Package price **\$1048 inc GST** with Irdeto 2.09 CI

eM Tech eM150IR



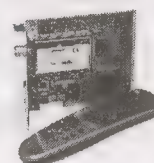
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TERRESTRIAL

Hauppauge Nova-T

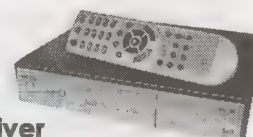
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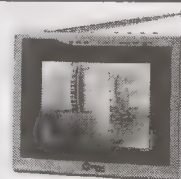
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Mysterious reception in Western Australia

"Although Chris from Lyngsat insists there are no vertical signals transmitted from Measat 2 on Ku, I am consistently receiving a very strong VTV service (package) as described below. Using a Gardiner 0.7 dB noise figure LNB, straight feed (no Polarotor) with a 2.7m solid dish here is what I find.

#1/ VTV from what surely is Measat 2 (11.523C)

#2/ Dream TV from Agila 2 at 146E

#3/ Various Ku services from Palapa C2

Located as I am in the extreme south-western corner of Western Australia, it is not as if I was up north along the coast. And while it is possible for one or perhaps two Ku services spot-beamed into a different region on the globe to "puddle" or show up way out of the normal service area, it seems quite incredible that I have three of these all at the same location on the same dish. Others in SW of W.A. have had similar results. We also in the past had service from PAS-2 Ku on the China beam which after observing it for some time disappeared when I reported it in SatFACTS (proving only that if you have a good one - it may be best to keep it out of print in SF!).

On the VTV service from Measat 2 at 148E: I have deliberately tried to null the reception, rotating the feed and cross-checking with (for example) the V and H services on Optus B3/C1. When I do this, the VTV service will not completely null out on Hz although it is significantly stronger on Vt. When I do have the feed nulling the vertical signal to its best null point, I can detect the presence of the Measat 11.602 horizontal service which helps verify I am on the Measat satellite.

When I do a spectrum analyser check, on horizontal you can see 11.602 and a small spike on 11.523. When the polarity is rotated 90 degrees, 11.523 becomes strong and 11.602 is a weak spike."

Alek Zaparra as zaparra@netspace.net.au

Editor's response: Alek provides off-screen photo evidence of his reception, leaving very little (if any) doubt that this is VTV from Viet Nam. There are at least two unknowns here. First, there is no known listing (even on the VTV web site) for such a service; on any satellite. Next, that it is so apparently vertically polarised (although very strong at Alek's receiving system) and with little question coming from either Measat 2 or another satellite located at the same geostationary position. The numbers for others who might wish to go looking: 11.523V, Sr 9.762, 3/4; VTV 5 has VPID 1050, A 1060, PCR 1050, SID 1,000, PMT 1010. What do others see?

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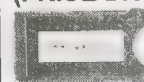
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Sign-off

Whither goest FREE TV?

New Zealand's Minister of Communications has asked interested parties (individuals and corporate bodies) to "comment" on how they would like to see the future television in the country configured. There are several options:

1/ Replace all existing analogue terrestrial transmitters with digital transmitters, operating both digital and analogue simultaneously for a transition period (5 to 10 years) thereby allowing consumers to "use up" their existing analogue TV and VCR devices, replacing with digital equivalents.

2/ Allow the existing analogue to run for perhaps another ten years, while encouraging consumers to "switch" from terrestrial VHF/UHF to a Sky Network TV satellite package which happens to include the present FTA national terrestrial channels (TVOne, TV2, TV3, TV4, Prime).

3/ Create quite separate from Sky their own MUX of the present FTA terrestrial channels, via satellite, and encourage viewers to switch to this service in lieu of Sky's carriage of the same channels.

4/ Do nothing. Wait five, ten years at the outside, and then whinge because Harvey Norman and other sellers of TV sets and VCRs are no longer able to source "old-fashioned" analogue TV sets - they having stopped manufacture in perhaps 2008, 2010 at the latest. "Will the last country in the world still using analogue terrestrial TV broadcasting, please turn off the lights?"

The conversion from terrestrial analogue to either terrestrial digital or satellite digital is a money burner. And it comes in steps - dollar steps.

Step one is for the broadcasters to create a digital format transmission, whether via satellite, terrestrial or heaven forbid, cable. That's private money from private sources - like Rupert Murdoch's seemingly bottomless deep pockets. Sky NZ transmits in digital but in recognition that no consumer in NZ yet has a digital format TV set, Sky provides a set-top box that receives the digital (satellite) transmissions and converts them back to analogue - to appease the TV set customers. As long as the last box in the line - the TV set (or VCR), remains analogue, this is hybrid digital - *partial digital*. It is NOT real digital and at best it is a stepping stone to an all-digital universe. Better than analogue? Typically, yes, given the poor grade of analogue terrestrial most homes experience. Digital TV? No. *Not yet*.

Step two is for the consumers to replace their analogue TV reception equipment (that includes every TV set in the home, motel, shops as well as every VCR) with a digital device. Based upon today's pricing of SDTV (standard definition digital) that works out to at least NZ\$1,000 per set to replace. With 2.8 million TV sets, another 1.1 million VCRs, that comes to NZ\$3,900,000,000 out of consumer pockets. Without respect to whether the transmission is via satellite, or terrestrial. Harvey Norman and its competitors are salivating over this bonanza, anxious for it to start.

Step three is for the satellite service provider, whether Sky NZ or a yet to happen government sponsored MUX, to take out all of the existing set-top digital to analogue reception boxes and replace them with digital to digital boxes. By the way, there is no such box in the world today - nobody has one but certainly designing and manufacturing such a box is not beyond our capabilities. If Sky NZ has 500,000 existing digital-analogue boxes in homes and commercial establishments, it would spend at least NZ\$250,000,000 to make this swap-out. Rupert Murdoch is NOT salivating over this prospect.

Somebody has to pay for all of this to happen. TV broadcasters in NZ proudly proclaim they are currently spending NZ\$30,000,000 to convert to digital production equipment. Obviously that is chicken feed, small change, in the larger world of replacing all TV sets and VCRs with digital equivalents.

"Let them buy a set-top digital to analogue box, instead" is often cited by the TV broadcasters. At NZ\$300 as pop, with 2.8 million TV sets and 1.1 million VCRs, that comes to a paltry NZ\$1,170,000,000; chicken feed again. But is this digital? No, it is a parody of what Sky now delivers via satellite - digital broadcast, analogue displayed on existing TVs and VCRs. Would it be an improvement over existing terrestrial? Of course. Is it what digital really is - with all of the benefits? No. Question: What logic suggests consumers should be urged to spend \$1,170,000,000 to keep their existing TV sets and VCRs operational for a few more years when for NZ\$3,900,000,000 they can have ALL of the benefits of REAL digital TV? All set-top boxes will do is postpone the day when one by one the set-top box equipped analogue TV will die anyhow, leaving them with a totally worthless \$300 set-top box and out shopping for a \$1,000 SDTV digital TV set (and companion VCR).

New Zealanders have been rushing to acquire the latest LCD/Plasma, 16:9 flat screen TVs. Harvey Norman advertising calls them digital. Line doubling, 100 hertz technology is not digital. DVD players do not create digital, yet. Yes, it remains analogue because at the end of the DVD connecting wire is an analogue TV set. Even if it does include a 42" 100 hertz plasma screen which Harvey Norman calls "digital."

To reproduce the true, original planned benefits of digital, no analogue parts can appear in the pathway of the signal. Analogue "dumbs down" the transmission, to the lowest level, from which there can be no economical recovery to digital. Once analogue, that's it, even if the analogue part appears in the line way back at the broadcast studio.

Is the transition to digital - real digital - worth all of the expense? Too late to ask that - there is no turning back, now. Can it be done for less money than now forecast? Yes, of course. Manufacture enough of anything and the price per piece comes down rapidly. But even if the price-per-piece drops to half of what it is this year, that is still NZ\$3,900,000,000 divided by 2 (or NZ\$1,950,000,000) which Kiwis will be forced to spend because folks in Switzerland and Tokyo have decided analogue TVs and VCRs will no longer be manufactured which in turn forces us to walk away from the existing 1,235 analogue TV transmitters in this country. New Zealand is at a cross-roads - turn left and you die, right and you drown. Neither are good options.

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Hard Core (Serious) "How to do it" References

- ☐ Tech Bulletin (TB) 9402: MATV (master antenna terrestrial) systems - wiring up a home, motel, hotel, camp site from one set of antennas - \$15 all regions
- ☐ TB 9404: Home Satellite Dish Systems. "Newbie" trying to work out what all those terms means and how a home system goes together? Perfect. \$15 all regions
- ☐ TB9405: Satellite to Room Systems. Combining MATV (9402) with satellite (9404) to distribute satellite TV reception to multiple outlets - 2 to 1000+! \$15 all regions.
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- ☐ TB9304: Identifying and eliminating noise interference from fence lines, signs, electrical appliances. How to cleanup marginal TV reception. \$15 all areas.
- ☐ TB9305: Cable TV - the basics. How a cable system works, how you can build one! \$15 all regions.
- ☐ Nelson Parabolic Manual. The "bible" of building your own 13 foot dish from scratch. Serious stuff for dedicated builders. \$15 all regions (supply limited).

SOFT CORE - recent back issues of SatFACTS (while supply lasts)

- ☐ SF#93 (May 2002) - European Piracy, hundreds of piracy web sites - \$10 all regions.
- ☐ SF#96 (August 2002) - Nokia BDM, Faster Channel Zapping with Nokia - \$10 all regions
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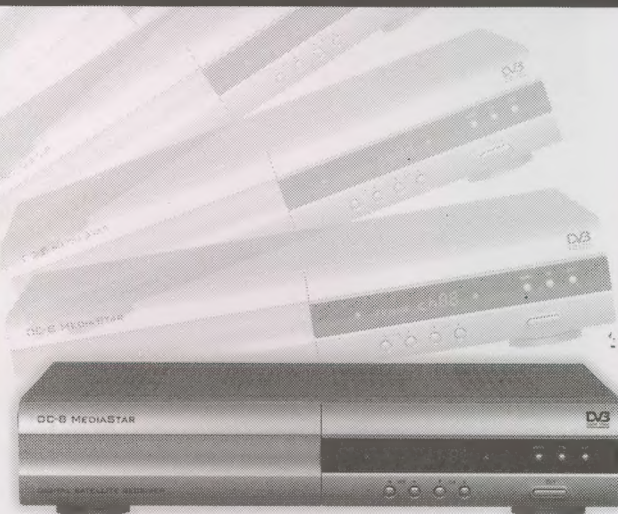
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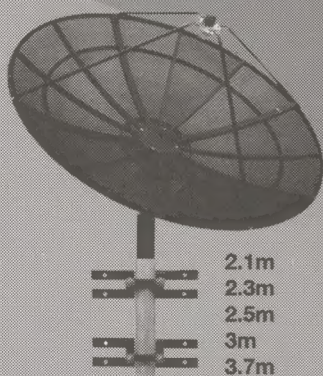
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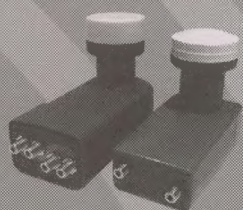


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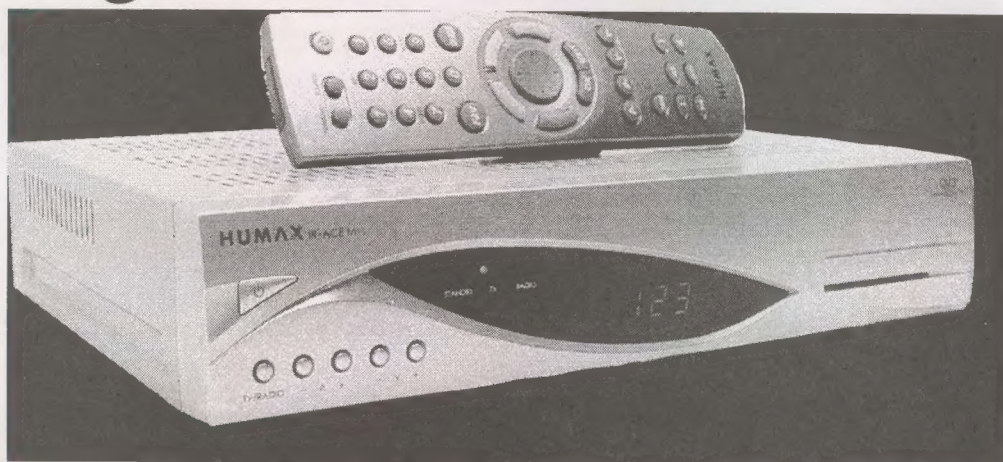
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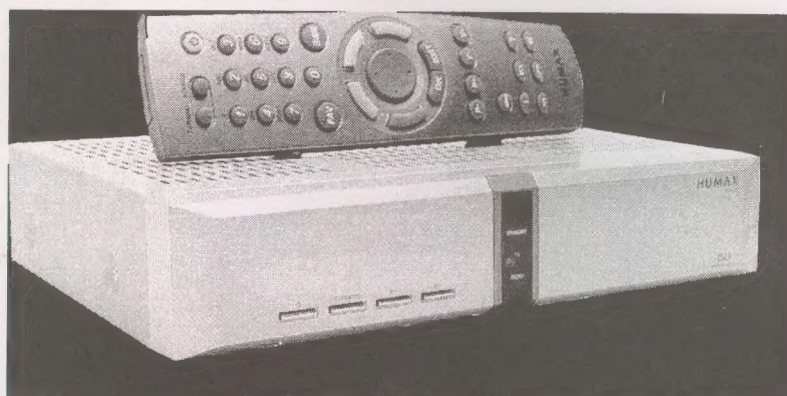
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